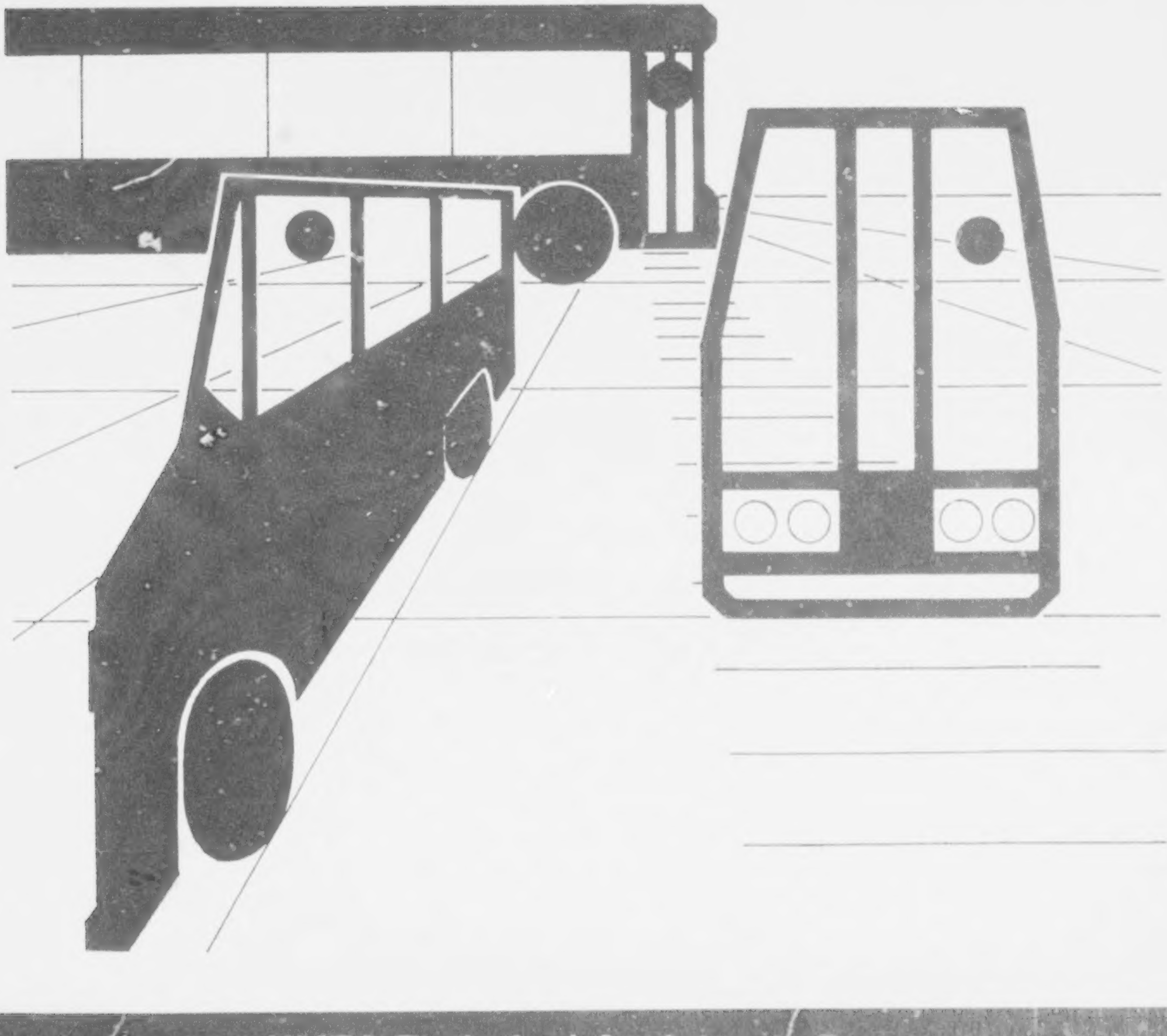
Sa 1/6

U.S. Department of Transportation

Safety, Loss Control and Risk Management

An Assessment of Practices at 17 U.S. Bus Transit Agencies

April 1989



UMTA Technical Assistance Program

TD 7.2:

READEX FICHE best copy available

Safety, Loss Control and Risk Management

An Assessment of Practices at 17 U.S. Bus Transit Agencies

Final Report
April 1989

Prepared by
Abacus Technology Corporation
5454 Wisconsin Avenue, Suite 1100
Chevy Chase, MD 20815

Prepared for
Office of Technical Assistance and Safety
Urban Mass Transportation Administration
U.S. Department of Transportation
Washington, D.C. 20590

Distributed in Cooperation with
Technology Sharing Program
U.S. Department of Transportation
Washington, D.C. 20590

DOT-T-89-18

PREFACE

This study examines the current safety, loss control and risk management practices in effect at 17 bus transit agencies. The study was sponsored by the U.S. Department of Transportation, Urban Mass Transportation Administration, Office of Technical Assistance and Safety, and performed by Abacus Technology Corporation under contract DTUM60-87-C-71329.

The data contained in this report were provided by various personnel from each of the 17 transit bus agencies. We wish to thank them for their cooperation and participation in this study. Many thanks go to Mr. Donald Dzinski of the American Public Transit Association for the many insights he provided and assistance rendered in bringing together study participants to collectively discuss study results. We also wish to thank Mr. Neil Moyer, Office of Motor Carrier Standards, Federal Highway Administration, for the invaluable information provided to study participants on the Commercial Driver Licensing and Testing Requirements and the impact of these requirements on public transit bus operations. We especially wish to thank Ms. Gwendolyn Cooper, Office of Mobility Enhancement, Technical Assistance and Safety, Urban Mass Transportation Administration, for her valuable supervision and guidance on the study effort, as well her comments on the draft report.

TABLE OF CONTENTS

CHAPTER	**TITLE**	**PAGE NUMBER**
Chapter 1	INTRODUCTION	1-1
Chapter 2	OBSERVATIONS AND RECOMMENDATIONS	2-1
Chapter 3	TOTAL COST OF RISK	3-1
Chapter 4	PROFILE OF LOSSES	4-1
Chapter 5	PROFILE OF SAFETY PROGRAMS	5-1
Chapter 6	PROFILE OF OPERATOR AND MECHANIC HIRING PROGRAMS	6-1
Chapter 7	PROFILE OF OPERATOR AND MECHANIC TRAINING PROGRAMS	7-1
Chapter 8	PROFILE OF DRUG AND ALCOHOL PROGRAMS	8-1
Chapter 9	PROFILE OF WORKER'S COMPENSATION REDUCTION PROGRAMS	9-1
Chapter 10	PROFILE OF RISK MANAGEMENT PROGRAMS	10-1
Chapter 11	SUMMARY OF STATE LAWS THAT IMPACT TRANSIT LOSSES	11-1
APPENDIX A	NOTEWORTHY LOSS CONTROL ACTIVITIES	A-1
APPENDIX B	LIST OF STUDY PARTICIPANTS	B-1
APPENDIX C	GLOSSARY OF SAFETY, LOSS CONTROL AND RISK MANAGEMENT TERMS	C-1
APPENDIX D	LIST OF STATE COMMERCIAL DRIVER'S LICENSE COORDINATORS	D-1
APPENDIX E	REFERENCES	E-1

LIST OF EXHIBITS

Exhibit	Title	Page Number
1-1	Trend in Federal Operating Assistance to Transit (1980-1987)	1-2
1-2	Distribution of Transit Operating Expenses	1-3
1-3	Participating Transit Agencies	1-5
1-4	Fleet Size of the Participating 17 Transit Agencies	1-6
1-5	Geographic Location of Transit Agencies	1-6
1-6	Characteristics of the Contractor Managed Transit Agencies	1-8
1-7	Characteristics of the Regional Transit Agencies	1-9
1-8	Characteristics of the County/Municipal Transit Agencies	1-10
2-1	Typical Safety Program Activities	2-2
2-2	Tests Included In Pre-Employment Physical Examinations	2-4
2-3	Length of Operator Training in Hours	2-6
2-4	Current Anti-Drug Testing Requirements	2-7
2-5	Organizational Responsibility for Risk Management	2-10
3-1	The Cost of Risk Among 17 Transit Agencies	3-3
3-2	Elements in the Total Cost of Risk	3-4
3-3	Bus Accident Losses in Relation to Total Operating Expenses	3-4
3-4	The Cost of Safety and Loss Control Activities	3-6
3-5	The Cost of Claims Handling and Risk Management Activities	3-7

Exhibit	Title	Page Number
4-1	Bus Transit Agency Losses in Relation to Total Operating Expenses (Three Year Average, 1985-1987)	4-3
4-2	Bus Transit Agency Losses by Loss Area In Relation to Total Operating Expenses (Three Year Average, 1985-1987)	4-5
4-3	Bus Accident Volume and Frequency (Three Year Average, 1985-1987)	4-7
4-4	Traffic Accident Frequency: Accidents Per Million Revenue Miles (Three Year Average, 1985-1987)	4-8
4-5	Location of Collisions with Other Vehicles (Three Year Average, 1985-1987)	4-9
4-6	Passenger Accident Frequency: Accidents Per Million Revenue Miles (Three Year Average, 1985-1987)	4-11
4-7	Bus Accident Losses in Relation to Total Operating Expenses (Three Year Average, 1985-1987)	4-12
4-8	Sample of Recent Large Claim Settlements	4-13
4-9	Comparison of Preventable Vs. Non-Preventable Accidents (Three Year Average, 1985-1987)	4-15
4-10	Frequent Types of Bus Accidents and Their Causes	4-16
4-11	Distribution of Worker's Compensation Claims By Employee Type	4-18
4-12	Worker's Compensation Claims Volume and Frequency By Employee Type (Three Year Average, 1985-1987)	4-19
4-13	Ranking of Worker's Compensation By Body Part Injured	4-21
4-14	Ranking of Workers Compensation Claims For Each Study Segment	4-22

Exhibit	Title	Page Number
4-15	Industrial Accident Losses in Relation to Total Operating Expenses (Three Year Average, 1985-1987)	4-25
4-16	Frequent Types of Worker's Compensation Claims and Their Causes	4-27
4-17	Property Exposure, General Liability and Professional Liability Losses in Relation to Total Operating Expenses (Three Year Average, 1985-1987)	4-28
5-1	Agencies With Designated Safety Responsibility Outside of the Transportation and Maintenance Departments	5-1
5-2	Accident Grading Responsibility	5-7
5-3	Number of Preventable Accidents Allowed in a 12 Month Period Before Termination	5-7
5-4	Safety Program Costs	5-9
5-5	Average Number and Cost of Personnel With Assigned Safety Responsibilities	5-10
5-7	Example of Safety Awards Costs	5-11
5-6	Other Safety Program Expenses	5-12
6-1	Organizational Responsibility for Hiring	6-2
6-2	Tests Included in Physical Examinations	6-5
6-3	Pre-Employment Tests for Operators and Mechanics	6-6
6-4	Hiring Program Costs as a Percent of Operating Expenses	6-8
6-5	Typical Hiring Program Costs	6-9
7-1	Average Duration of Operator Training in Hours	7-3
7-2	Frequency of Refresher Training for Operators	7-6

Exhibit	Title	Page Number
7-3	Availability of Structured Shop Safety Instruction	7-7
7-4	Training Costs as a Percent of Operating Expenses	7-9
7-5	Operator and Mechanic Training Program Expenditures	7-9
8-1	Ranges of Anti-Drug Policies at Transit Agencies	8-5
8-2	Drug Test Requirements Among 17 Transit Agencies	8-6
8-3	Summary of Tests Used to Detect the Presence of Prohibited Substances in the Body	8-8
8-4	Examples of Controlled Substance Cut-Off Points and Indicated Disciplines	8-10
8-5	Current Anti-Drug Testing Requirements	8-12
8-6	Availability of Employee Assistance Programs	8-14
8-7	Anti-Drug Programs Costs	8-17
8-8	Personnel Equivalents Assigned to Anti-Drug Programs	8-18
8-9	Expenses Other Than Labor for Anti-Drug Programs	8-18
10-1	Organizational Responsibility for Risk Management	10-3
10-2	Methods of Providing Coverage by Risk Area at the Transit Agencies Studied	10-7
10-3	In-House Vs. Contractor Liability Claims Handling Costs	10-13
10-4	In-House Vs. Contractor 1987 Worker's Compensation Claims Handling Costs	10-14

Exhibit	Title	Page Number
10-5	Personnel Resources Assigned to Risk Management Administration	10-15
10-6	Insurance Premiums	10-16
10-7	Examples of Premiums Paid for All Risk Property Coverage	10-18
10-8	1987 Professional Liability Premiums	10-19
11-1	Factors Affecting Automobile/Bus Liability Claims	11-7
11-2	Tort Reforms Affecting Transit Agencies Studied (1986-1987)	11-13

1. INTRODUCTION

Changes in society, the American workforce and State laws are presenting increasing challenges to transit agencies. Detection of drug and alcohol use, reduction of time lost due to industrial injuries, response to stiffer operator licensing requirements and protection against increasing liability costs are a few of the topics demanding more time and attention from transit managers. At the same time, State and Federal policymakers are concerned about government's ability to maintain needed public transportation services in a time of scarce revenues. In acknowledgement of these pressures, the Urban Mass Transportation Administration (UMTA) undertook this study to identify the extent of losses from risk being experienced by transit agencies and current efforts to reduce those losses. This study is important because, for the first time, losses from risk and expenditures for controlling these losses have been quantified in a sample group of transit agencies.

This introductory chapter presents a synopsis of the study background and purpose, identification of the participating transit agencies and an overview of the study approach. The study observations, recommendations and detailed findings are presented in Chapters 2 through 11.

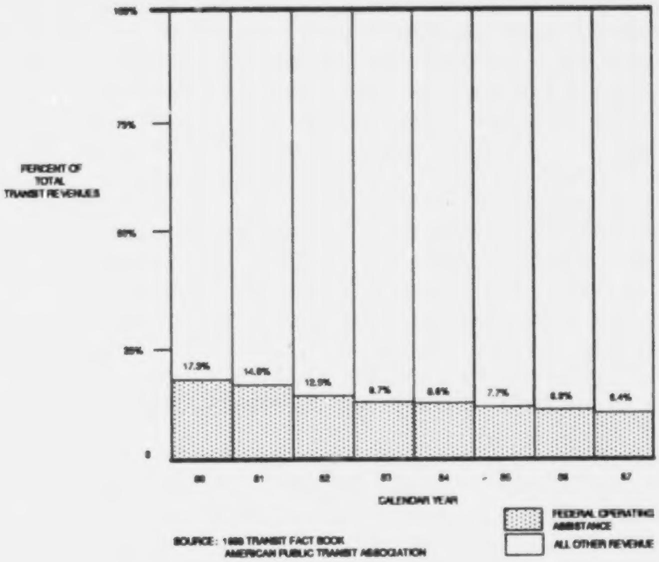
1.1 BACKGROUND

In the recent decade strong financial pressure has been placed on U.S. bus transit agencies:

- Federal appropriations for mass transit agencies were reduced as part of the effort to reduce the federal deficit (see Exhibit 1-1).
- The liability crisis of 1985-1986 made it more difficult and expensive for local transit agencies to obtain worker's compensation, casualty and liability insurance. Although rates have softened since then, they are expected to start increasing again by 1991.

These financial constraints have been accompanied by an increase in demand placed on the existing transportation infrastructure resulting from the massive growth of America's suburbs and the movement of many industries from cities to suburbs. New inter-suburban public transportation services are needed to move people from their inner-city or suburban homes to suburban work places. At the same time, transit agencies are required to continue providing existing services.

EXHIBIT 1-1
TREND IN FEDERAL OPERATING ASSISTANCE TO TRANSIT
1980 TO 1987



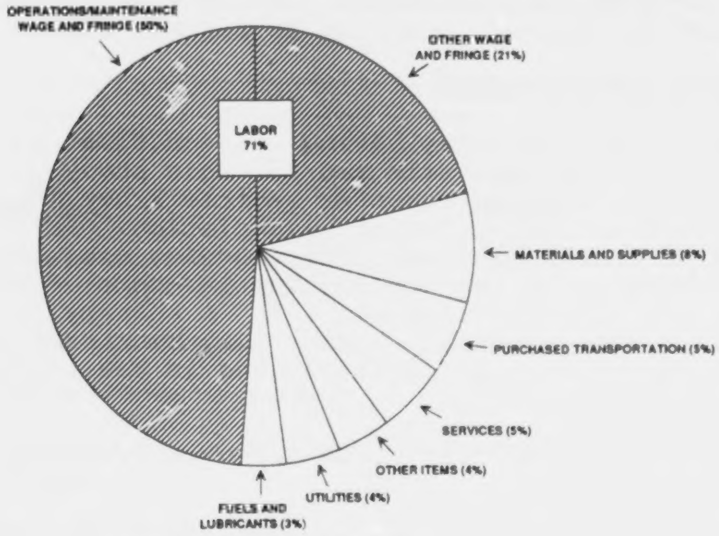
SOURCE: 1989 TRANSIT FACT BOOK
AMERICAN PUBLIC TRANSIT ASSOCIATION

Transit agency managers are looking for ways to increase revenues and cut costs without impacting service or safety. Methods for increasing revenues are limited and entail making additional demands on the consumer through increased fares. Opportunities for cutting costs are also limited because of the labor intensity of the transit industry:

- Total labor and fringe benefit costs consume up to 70 percent of total transit operating budgets.
- Labor and fringe costs for operators and mechanics alone may comprise 50 percent of total budgets (see Exhibit 1-2).

When transit managers consider reducing costs, they look at manpower, level of service and other large dollar items such as the marketing budget. In many agencies, service and employment levels have taken sudden serious cuts when sufficient funds were not available. Then, when a sudden increase in demand for service is made such as for current suburban mobility needs, the agency finds that it has discharged experienced operators and has had to repeat the time-consuming and costly cycle of screening applicants and hiring and training drivers and mechanics. The safety of transit operations could be impacted by such large cost reductions and turnovers. Thus, alternative ways to reduce costs without affecting service and safety are needed. Enhanced loss control is such an alternative method of reducing costs.

EXHIBIT 1-2
DISTRIBUTION OF TRANSIT OPERATING EXPENSES



SOURCE: 1988 FACT BOOK, AMERICAN PUBLIC TRANSIT ASSOCIATION

Historically, loss control has not been prominent in transit organizations; it has been overshadowed by service and labor issues. The governing boards of individual transit agencies may be briefed monthly on claims payments as part of the financial review, but management focus is often concentrated on operating, service or labor problems. The transit industry has also traditionally separated the responsibilities of safety and loss control programs from risk management. In some agencies, risk management departments are even located in distant branches of county/municipal governments. As a result, very little has been known about the extent of losses in the transit community.

1.2 PURPOSE OF THE STUDY

The purpose of the study was to examine safety, loss control and risk management programs and practices at 17 bus transit agencies. Specific objectives of the study were to:

- Assess the risk and liability exposure of the bus transit agencies
- Profile existing safety, loss control and risk management programs and practices
- Recommend strategies that could be used by the transit agencies to further reduce their losses.

To fulfill these objectives, detailed profiles of the total cost of risk and current practices to reduce losses due to risk were developed. In addition, the study assessed safety and loss control program administrative costs and developed recommended strategies for transit agencies to further reduce losses.

1.3 STUDY PARTICIPANTS

Bus transit agencies having a coach fleet size of from 500 to 1,000 vehicles were selected for this study utilizing data from the 1987 Transit Passenger Vehicle Fleet Inventory published by the American Public Transit Association. Later, several agencies with smaller fleet size (200-500 vehicles) were added to broaden the base of the study. The 17 cooperating transit agencies are listed in Exhibit 1-3. A summary of noteworthy loss control activities at each agency is presented in Appendix A. The names of individuals who participated in the study are presented in Appendix B.

The study group fleet size and geographic distribution are characterized below.

- Fleet Size. As shown in Exhibit 1-4, the fleet size of the 17 agencies ranges from 200 to 1,000 linehaul buses. The mean fleet size is 571 buses.

- Geographic Distribution. The participating transit agencies are located in 14 states representing most principal regions of the country including the East and West coasts, the Midwest and the South. The cities in which the participating agencies are located are shown in Exhibit 1-5.

1.4 STUDY APPROACH

Transit agency losses due to accidents and claims were examined for the three year period 1985-1987. In addition, all program activities directed toward reducing losses were examined. These included operator and mechanic safety, hiring, training, substance abuse programs, activities to reduce worker's compensation claims and risk management programs. External factors affecting losses, such as state laws and provisions in labor contracts, were also assessed.

The participating transit agencies received advance notice of the study scope and the types of data required. Data was collected through telephone discussions and site visits to each transit agency. After the first five agencies were visited, an interim report was compiled to assist the study team in structuring and clarifying the analytic approach.

EXHIBIT 1-3
PARTICIPATING TRANSIT AGENCIES

Connecticut Transit	Hartford, CT
Suburban Mobility Authority for Regional Transportation (formerly known as SEMTA)	Detroit, MI
Milwaukee County Transit System	Milwaukee, WI
Greater Cleveland Regional Transit Authority	Cleveland, OH
PACE Suburban Bus Division of the Regional Transit Authority	Arlington Hts, IL
Metropolitan Atlanta Rapid Transit Authority (MARTA)	Atlanta, GA
Santa Clara County Transportation Agency	San Jose, CA
San Francisco Municipal Railway (MUNI)	San Francisco, CA
Tri-County Metropolitan Transportation District of Oregon (Tri-Met)	Portland, OR
Orange County Transit District	Garden Grove, CA
Greater Richmond Transit Authority	Richmond, VA
Regional Transportation District (Denver RTD)	Denver, CO
Bi-State Development Agency (St. Louis)	Saint Louis, MO
Memphis Area Transit Authority	Memphis, TN
Detroit Department of Transportation	Detroit, MI
Dallas Area Rapid Transit	Dallas, TX
Broward County Division of Mass Transit	Pompano Beach, FL

Names of individual partipants are listed in Appendix B.

EXHIBIT 1-4
FLEET SIZE OF THE PARTICIPATING 17 TRANSIT AGENCIES

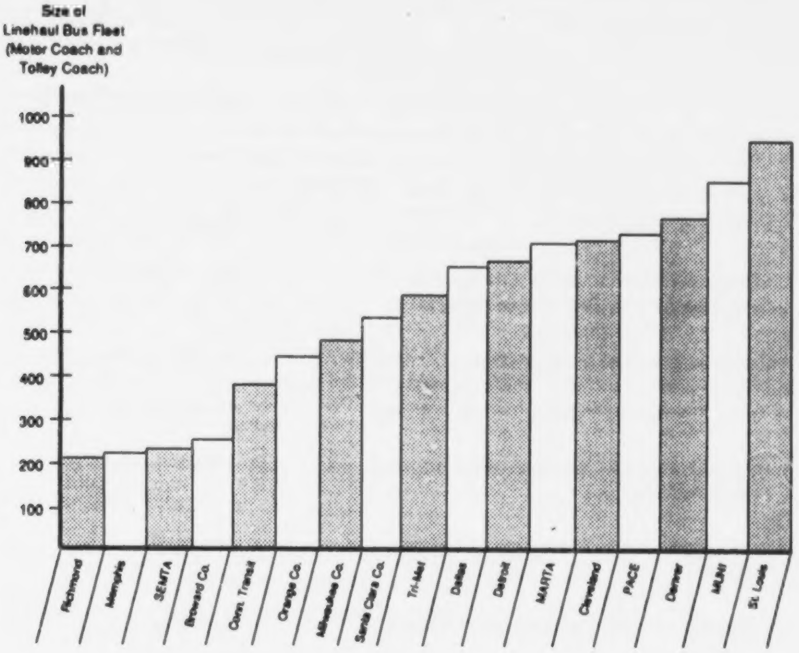
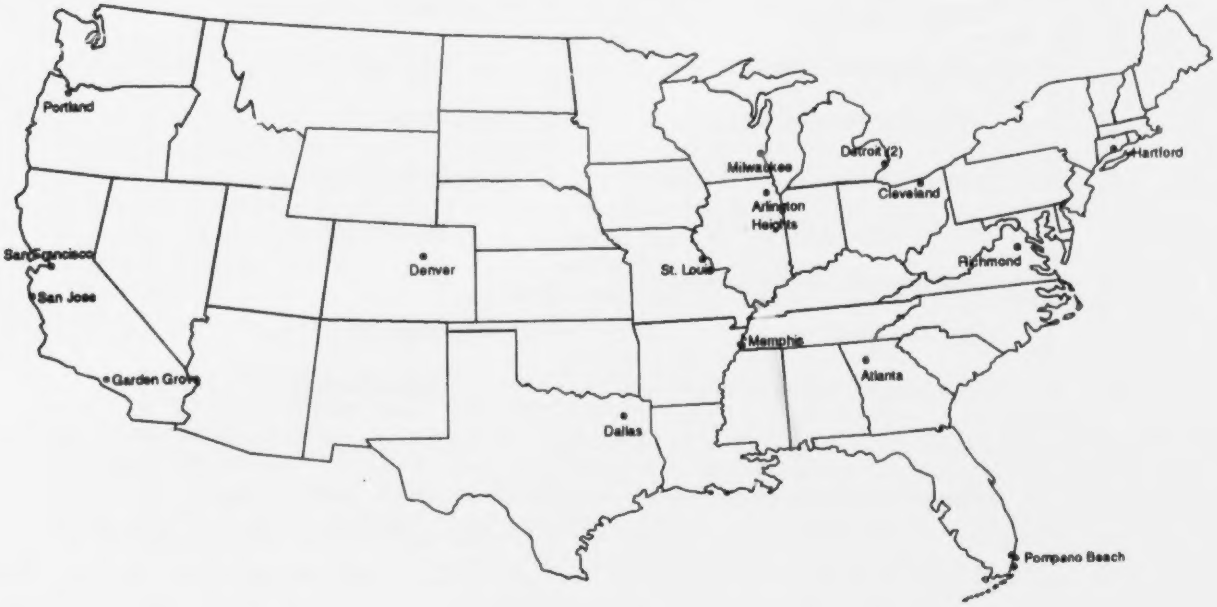


EXHIBIT 1-5
GEOGRAPHIC LOCATION OF TRANSIT AGENCIES



The cooperating transit agencies had an opportunity to participate in the refinement of the study conclusions and recommendations through review of the draft final report and through group discussions at a workshop in Washington, D.C. on January 12, 1989.

A constraint in the study was the need to maintain confidentiality of loss and cost information provided by the participants. Thus the 17 agencies were organized into three study segments for the presentation and display of data. The segments include:

- Contractor managed transit agencies
- Regional transit agencies
- County/municipal transit agencies.

The study findings and observations regarding these segments are for the 17 transit agencies; they do not necessarily represent the transit industry as a whole. Characteristics of the transit agencies in each segment are presented below.

(1) Contractor Managed Transit Agencies

A management overview of the contractor managed transit agencies included in this study is shown in Exhibit 1-6. In this segment, transit assets are owned by a state or city but each agency is managed by employees of a private management company. The contractor managed agencies are some of the smallest in this study, with the number of routes operated ranging from 42 to 79. Linehaul fleet sizes range from 207 to 530 buses and total linehaul operating expenses vary from $16.9 million to $64.5 million.

(2) Regional Transit Agencies

A management overview of the regional transit agencies in the study is shown in Exhibit 1-7. These transit agencies are typically self-owned, directed and managed. All of these agencies provide linehaul bus service. In addition, 88 percent provide paratransit service. In this segment the number of routes operated for linehaul service ranges from 34 to 321. Linehaul fleet sizes range from 244 to 951 buses and total linehaul operating expenses vary from $25.3 million to $98.3 million.

(3) County/Municipal Transit Agencies

A management overview of the county/municipal transit agencies is shown in Exhibit 1-8. These agencies are owned and operated by a county or municipal government agency. The average number of routes operated is 57. The fleet

EXHIBIT 1-6
CHARACTERISTICS OF THE CONTRACTOR MANAGED TRANSIT AGENCIES

CONTRACTOR MANAGED TRANSIT AGENCIES	CONNECTICUT TRANSIT	MILWAUKEE COUNTY	RICHMOND	MEMPHIS
MANAGEMENT OVERVIEW				
ASSETS OWNED BY	STATE OF CONN.	MILWAUKEE COUNTY	CITY OF RICHMOND	MEMPHIS AREA TRANSIT AUTHORITY
AGENCY DIRECTED BY	CONNECTICUT DEPARTMENT OF TRANSPORTATION	MILWAUKEE COUNTY DEPARTMENT OF PUBLIC WORKS	BOARD OF DIRECTORS	BOARD OF COMMISSIONERS
AGENCY MANAGED BY	HNS MANAGEMENT COMPANY	MILWAUKEE TRANSPORT SERVICES ,INC.	OLD DOMINION TRANSIT MGMT CO.	MID-SOUTH MGMT, INC.
OPERATIONS OVERVIEW				
TYPE OF SERVICE				
LINEHAUL BUS	YES	YES	YES	YES
PARATRANSIT		YES		
RAIL				
OTHER				YES
OPERATING STATISTICS (1987)				
LINEHAUL FLEET SIZE	391	530	207	222
LINEHAUL OPERATING MILES	10,250,888	18,682,600	5,239,100	6,553,995
LINEHAUL ROUTES OPERATED	79	63	57	42
TOTAL LINEHAUL RIDERS	25,597,454	68,640,643	17,406,592	13,665,265
TOTAL LINEHAUL OPERATIONS EXPENSES	$38,028,887	$64,518,500	$16,994,422	$18,498,986

EXHIBIT 1-7
CHARACTERISTICS OF THE REGIONAL TRANSIT AGENCIES

REGIONAL TRANSIT AGENCIES	SEMTA	MARTA	PACE	TRI-MET	ORANGE COUNTY	DENVER RTD	SAINT LOUIS	DALLAS	CLEVELAND RTA
MANAGEMENT OVERVIEW									
ASSETS OWNED BY	SEMTA (SMART)	MARTA	PACE	TRI-MET	ORANGE COUNTY TRANSIT DEPT.	STATE OF COLORADO	BI-STATE DEV. AGENCY	DART	GREATER CLEVELAND R.T.A
AGENCY DIRECTED BY	BOARD OF GOVERNORS	BOARD OF GOVERNORS	BOARD OF LOCAL COMMUNITY REPRESENTATIVES	BOARD OF GOVERNORS	BOARD OF GOVERNORS	BOARD OF GOVERNORS	BOARD OF GOVERNORS	BOARD OF GOVERNORS	BOARD OF TRUSTEES
AGENCY MANAGED BY	SEMTA	MARTA	PACE	TRI-MET	OCTD	DENVER RTD	BI-STATE DEV. AGENCY	DART	GREATER CLEVELAND R.T.A.
OPERATIONS OVERVIEW									
TYPE OF SERVICE									
LINEHAUL BUS	YES	YES	YES	YES	YES	YES	YES	YES	YES
PARATRANSIT	YES	YES	YES		YES	YES	YES	YES	YES
RAIL		YES		YES					
OTHER					YES		YES		
OPERATING STATISTICS (1987)									
LINEHAUL FLEET SIZE	244	717	723	596	442	787	951	653	719
LINEHAUL OPERATING MILES	9,763,883	30,323,000	16,854,188	21,020,000	17,286,362	26,293,708	24,862,139	21,115,252	23,525,044
LINEHAUL ROUTES OPERATED	34	123	321	71	50	149	128	146	98
TOTAL LINEHAUL RIDERS	8,261,715	47,475,000	32,474,529	42,271,000	30,319,255	37,665,505	67,754,614	41,117,099	63,640,304
TOTAL LINEHAUL OPERATION EXPENSES	$25,310,000	$80,644,945	$38,326,497	$62,891,000	$85,136,270	$98,329,000	$91,732,882	$70,450,447	NOT AVAILABLE

EXHIBIT 1-8
CHARACTERISTICS OF THE COUNTY/MUNICIPAL TRANSIT AGENCIES

COUNTY\MUNICIPAL TRANSIT AGENCIES	SANTA CLARA COUNTY	MUNI	DETROIT DOT	BROWARD COUNTY
MANAGEMENT OVERVIEW				
ASSETS OWNED BY	SANTA CLARA TRANSIT DISTRICT	MUNI	CITY OF DETROIT	BROWARD COUNTY
AGENCY DIRECTED BY	SANTA CLARA COUNTY TRANSIT BOARD OF SUPERVISORS	SAN FRANSISCO PUBLIC UTILITIES COMMISSION	MAYOR OF DETROIT	BOARD OF COUNTY COMMISSIONERS
AGENCY MANAGED BY	SANTA CLARA COUNTY TRANSIT AGENCY	MUNI	DETROIT DOT	BROWARD COUNTY DIV. OF MASS TRANSIT
OPERATIONS OVERVIEW				
TYPE OF SERVICE				
LINEHAUL BUS	YES	YES	YES	YES
PARATRANSIT		YES		
RAIL	YES	YES		
OTHER		YES	YES	
OPERATING STATISTICS (1987)				
LINEHAUL FLEET SIZE	558	885 (incl. trolley coach)	665	253
LINEHAUL OPERATING MILES	22,743,434	22,951,199	24,873,659	9,584,237
LINEHAUL ROUTES OPERATED	79	71	62	33
TOTAL LINEHAUL RIDERS	34,160,000	200,549,678	53,235,000	12,145,868
TOTAL LINEHAUL OPERATIONS EXPENSES	$101,314,421	$154,725,521	$126,081,400	$31,689,307

sizes of the individual agencies range from 253 to 665 buses and total linehaul operations expenses vary from $31.6 million to $154.7 million.

* * * * *

In summary, this study was performed in response to the growing need of transit managers to reduce losses due to risk. The study approach included data collection through telephone and on-site interviews and organization of the study data into three transit industry segments. A total of 17 agencies cooperated in the study. An analysis of the risk and liability exposure of the bus transit agencies was conducted as well as an assessment of current practices to reduce losses due to risk. The next chapter summarizes the principal observations and recommendations of the study.

2. OBSERVATIONS AND RECOMMENDATIONS

The reduction of accidents and associated losses is the chief focus of transit safety and loss control programs. Each transit agency conducts a variety of activities targeted at accident prevention, emergency response and safety awareness. Transit agencies do not have complete control over the amount of their losses, however. Every state code and transit labor union contract has provisions regarding the amount of compensation and benefits that will be paid as a result of a worker's compensation claim. Many states also have statutory limitations which can impact the amount of liability settlements for bus accidents. Despite these restrictions, there are a variety of loss control strategies which can be considered for implementation at transit agencies to curb losses.

One strategy that is found infrequently among many of the transit agencies is integration of the numerous existing loss control activities. The few transit agencies that do emphasize integration of program activities through interdepartmental cooperation report that they have experienced marked improvement in their own safety and loss control indicators. At most other agencies there is room for greater program integration.

The remainder of this chapter contains general observations on the loss control practices of the transit agencies studied and eight specific recommendations for further loss reduction.

2.1 OBSERVATIONS

The following observations about loss control practices among the 17 transit agencies are organized into six topic areas:

- Safety programs
- Operator and mechanic hiring programs
- Operator and mechanic training programs
- Anti-drug programs
- Programs to reduce worker's compensation
- Risk management programs.

2.1.1 Transit Agency Safety Programs are Generally Effective but Very Broad and Fragmented

At the agencies studied, the combined bus accident rate declined by 13 percent in the last three years. (When viewed individually, not all agencies experienced a decline.) The average rate of bus accidents for the years 1985, 1986 and 1987 was 82, 73 and 71 accidents per million miles respectively. This downward trend suggests that overall, current safety programs are effective in reducing accidents. The impact of this overall accident decline on dollar losses cannot be immediately discerned since settlement of claims can require 5 years or longer.

(1) Existing Programs Encompass a Variety of Safety-Related Activities

Safety programs encompass numerous specific tasks that together form a comprehensive approach to reducing accidents and losses. Examples of specific types of activities are shown in Exhibit 2-1. The breadth of these activities requires that responsibility for them be shared among multiple transit professionals.

EXHIBIT 2-1
TYPICAL SAFETY PROGRAM ACTIVITIES

	Percent of Transit Agencies			
SAFETY ACTIVITIES	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Transit Agencies	County/ Municipal Transit Agencies
Safety Program Plans and Policies	41	50	44	25
Safety Incentives				
Operators	100	100	100	100
Mechanics	59	25	77	50
Trans/Maint Joint Safety Meetings	59	25	67	75
Employee Monitoring				
Driving Skills	88	75	89	100
Shop Practices	53	25	78	25
Equip. Inspections	100	100	100	100
Facil. Inspections	100	100	100	100
Safety Instruction				
Hazardous Matl's	76	75	67	100
Fire Procedures	88	100	88	75
First Aid/CPR	53	50	67	25
Proper Lifting	71	50	67	100

(2) Responsibility for Safety Programs is Split Among Several Transit Departments

At all the transit agencies studied, the chief responsibility for safety lies within the bus operations and bus maintenance departments. The directors of these departments are responsible for enforcement of safety policies and providing discipline to operators and mechanics who do not comply with the policy. However, at approximately two-thirds of the transit agencies, there is also at least one person outside of these departments who is designated as the safety manager. While these safety managers are typically responsible for the drafting of safety related documents and reporting of overall safety trends, they may also share some overlapping responsibilities for carrying out day-to-day safety activities.

2.1.2 OPERATOR AND MECHANIC HIRING PROGRAMS ARE TARGETED AT SCREENING OUT UNSATISFACTORY CANDIDATES

The process of hiring operators and mechanics encompasses many activities designed to identify reliable, low risk employees. The many steps in hiring include initial candidate screening (checks of work history, driving record and interpersonal relations skills), final candidate screening (physical examination and pre-employment tests) and evaluation of new employees during the probation period.

(1) Transit Agencies View the Hiring of Operators and Mechanics as a Key Loss Control Function, Yet Some Agencies Do Not Fully Control the Process

All the transit agencies assign responsibility for operator and mechanic hiring to the human resources department. Additionally, at approximately three-fourths of the agencies, representatives of the transportation and maintenance departments participate in the personal interviews and final hiring decisions. County/municipal agencies are often dependent on personnel from other local government agencies (e.g., city personnel department) for hiring. This lack of direct control over the hiring process is a source of frustration to some county/municipal transit managers. For example, the City of Detroit does the recruiting and initial screening of operators for the Department of Transportation. In a recent example, the City approved approximately 1,000 candidates for operator positions, yet only 42 were found to be qualified to work as an operator by the Detroit Department of Transportation.

(2) Most Transit Agencies Screen Applicants For Bus Operator and Mechanic Positions To The Maximum Extent Possible

The initial screening of applicants for bus operator and mechanic positions typically includes a job history check and driving record check. All the transit agencies check employment and conduct reference checks and verify the applicants' driving record. In addition, all of the county/municipal agencies and 75 percent of contractor managed transit agencies perform a criminal record check on applicants who pass the initial screening. In comparison, a check for a criminal record is performed by only 33 percent of regional transit agencies. Agencies that do not perform criminal record checks may be constrained by state law - some states specifically preclude employers from conducting such checks. Those transit agencies that have instituted criminal background checks, such as the Metropolitan Atlanta Rapid Transit Authority and the Dallas Area Rapid Transit Authority have found them to be useful in screening out candidates who have been convicted of felony crimes.

(3) A Majority of Transit Agencies Require a Pre-Employment Back X-Ray and Drug Test

The most qualified applicants at each transit agency are sent for a pre-employment physical examination. The examinations are thorough and often include back X-rays, drug-alcohol screening, eye examinations and hearing tests. As shown in Exhibit 2-2, more emphasis is placed on back x-rays at contractor managed and county/municipal agencies

EXHIBIT 2-2
TESTS INCLUDED IN PRE-EMPLOYMENT PHYSICAL EXAMINATIONS

	Percent of Transit Agencies			
ITEMS INCLUDED IN PHYSICAL EXAMINATION	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Back X-Ray	65	75	44	100
Eye Exam	71	50	78	75
Hearing Test	59	50	56	75
Drug/Alcohol Screen	88	100	78	100

than regional transit agencies. Transit agencies that require the back x-ray, such as the Orange County Transit District and the Denver Regional Transportation District, find it helps the examining physicians to identify poor candidates for operator and mechanic positions.

2.1.3 OPERATOR AND MECHANIC TRAINING PROGRAMS EMPHASIZE SAFE BUS OPERATION BUT TEND TO NEGLECT SHOP SAFETY

All of the transit agencies combined spend an average of .35 percent of total operating expenses on training, or an average of $237,690 per year. All transit agencies allocate from .28 to .40 percent of operating expenses to operator training. Safety training for mechanics on the other hand, receives a much smaller amount (.02 to .05 percent) of total transit operating expenses.

(1) Training Programs for New Operators are Lengthy, Lasting An Average of 27 Days

A structured operator training course is provided at all the transit agencies. The training comprises both classroom work and on-the-road drivers training, with a total instruction period ranging from 20 to over 30 days. The main difference in training duration is due to county/municipal training programs allowing more time for classroom instruction and supervised bus operation while the bus is in service. The larger the transit agency and service area, the more time is needed to acquaint new operators with the bus routes and schedules. Thus, differences shown in Exhibit 2-3 in the hours spent in supervised bus operation (bus in service) may partly be attributed to differences in average agency size.

(2) Instruction in Shop Safety for Entry Level and Senior Mechanics is Informal and Poorly Documented

At many transit agencies, new shop employees are placed with an experienced worker to learn the daily work procedures. Few agencies indoctrinate new employees in shop safety procedures by means of a structured course or lecture. Similarly, experienced mechanics receive little in the way of formal safety instruction. Training in the maintenance department is focused on the repair work itself. An average, five percent of mechanical and electronics repair instruction time may be spent addressing safety topics. Many maintenance supervisors also provide weekly "tailgate topics," which are informal five minute discussions of a work-related topic, usually relevant to safety.

EXHIBIT 2-3
LENGTH OF OPERATOR TRAINING IN HOURS

TYPES OF TRAINING	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Classroom Instruction	61.6	53.5	49.8	81.5
Driving Instruction (Bus Not In Service)	58.5	58.5	57.7	59.5
Supervised Bus Operation (Bus in Service)	97.7	74.0	90.2	129.0
Total Duration of Training Program	217.8	186.0	197.7	270.0

2.1.4 CURRENT ANTI-DRUG PROGRAMS COMPLY WITH SOME ASPECTS OF UMTA'S FINAL RULE BUT DO NOT PROVIDE FOR RANDOM TESTING

Under UMTA's final rule which became effective December 21, 1988, transit agencies that receive federal assistance under Sections 3, 9 and 18 of the UMTA Act are required to have drug testing programs for employees in safety sensitive positions. The rule mandates procedural and reporting requirements, education and training of employees and drug tests to be performed under pre-employment, post-accident, reasonable cause, return to duty and random testing conditions.

(1) Most Transit Agencies Already Have Drug Programs

Exhibit 2-4 shows the extent of current drug programs compliance with the UMTA requirements. Eighty-eight percent of agencies currently have requirements for pre-employment and reasonable cause testing. Seventy-six percent currently

EXHIBIT 2-4
CURRENT ANTI-DRUG TESTING REQUIREMENTS

	Percent of Transit Agencies			
TEST REQUIREMENTS	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Pre-Employment	88	100	78	100
Post Accident	76	75	78	75
Reasonable Cause	88	75	89	100
Random	0	0	0	0
Return to duty	18	25	11	25

require post-accident drug testing and 18 percent require testing when an employee returns to duty after treatment at an employee assistance program.

(2) However, No Transit Agency Currently Requires Random Drug Testing

UMTA believes that unannounced testing based on random selection is a fundamental component of an effective anti-drug program. None of the transit agencies currently have random testing programs in place. To comply with the new rule, agencies will be allowed to phase in random drug testing during the first 12 months in which tests are conducted. UMTA's final rule also reduced the testing rate from 125 percent of affected employees to 50 percent.

(3) Parts of the Education and Training Requirements Are Already Being Met

UMTA's final anti-drug rule does not include the requirement that employers offer employee assistance programs (EAP's) with options for rehabilitation. Employers are, however, encouraged to consider rehabilitation opportunities and to provide job security to employees enrolled in rehabilitation programs. Ninety-four percent of the transit agencies in the study currently have EAP's.

Most provide some education to transit employees through informational material, hotline telephone numbers and reinforcement of the transit agency's anti-drug policy.

(4) Transit Agencies Need to Set Up New Reporting and Recordkeeping Systems

Semi-annual reports consisting of 13 data items are required from all transit agencies. Agencies need to set up reporting systems by mode to prepare for these requirements. The rule also requires that transit agencies retain records for those employees who fail tests for five years and for those who pass tests for one year.

2.1.5 PROGRAMS TO REDUCE WORKER'S COMPENSATION COSTS PRIMARILY FOCUS ON BUS OPERATORS AND TEND TO BE REACTIVE RATHER THAN PREVENTIVE

Existing programs to reduce worker's compensation are targeted more at bus operators than mechanics, yet mechanics have a higher per capita rate of industrial injuries. Bus operators do account for the highest volume of claims (59 percent). However, when differences in staff size are considered, the claims frequency rate among bus mechanics is more than double that of bus operators. Specifically, claims can be expected at a rate of 44 claims per hundred mechanics versus 20 claims per hundred operators.

(1) Worker's Compensation Cost Reduction Programs at Most Agencies Include Periodic Physicals and a Light Duty Policy

Periodic physical examinations are required by 65 percent of transit agencies for operators and 47 percent for mechanics. The majority of these examinations are given every two years. In some states the biennial examinations are required to satisfy requirements of the current vehicle operators licenses.

Some type of light duty program is in effect at 65 percent of the transit agencies assessed. These programs range from highly structured programs with written administrative procedures to programs where placements are made informally. At agencies where policies are not in effect, there is usually a lack of agreement with the operator's union over issues such as seniority and job transfer. The overall emphasis in worker's compensation programs appears to be toward getting bus operators back to work.

(2) Wellness/Fitness Programs to Prevent Injuries Exist in Very Few Transit Agencies

Transit operators and mechanics are subject to substantial physical demands. The back is the most frequently injured part of operators, and hands and fingers are the parts most often injured by mechanics. Lectures and specific exercises which can aid in protecting and preventing injury to these body parts may have a large payoff for both management and employees. Only 29 percent of the transit agencies in this study currently offer health screening programs, and only 24 percent currently offer special fitness activities to help prevent injuries.

2.1.6 RISK MANAGEMENT IS PERCEIVED AS A FINANCIAL FUNCTION SEPARATED FROM SAFETY AND OTHER LOSS CONTROL PROGRAM AREAS

Historically, transit risk managers have been concerned with financial decisions involving contingency reserve funds and purchase of insurance. However, the position of risk manager in transit agencies has taken on increased importance in the last decade as the agencies assume more risk through self-insurance rather than pay the high cost of commercial insurance. Thus, risk management emphasis on financial concerns can be somewhat limiting in that the risk manager may not be informed about other transit loss control activities including safety, hiring and training programs. A more integrated approach to risk management is a very logical counterpart to the current trend toward self-insurance.

(1) Risk Management is Predominantly Located in the Financial or Administrative Department of the Transit Agencies

Sixty-five percent of risk managers are organizationally located within a financial or administrative services department as shown in Exhibit 2-5. All four of the county/municipal transit agency risk managers are located in a higher government agency, usually in the finance department. One regional transit agency has placed risk management in the legal department, and at one contractor managed agency the risk manager is the Assistant General Manager.

(2) Few Transit Agencies have Co-Located Their Risk Manager and Safety Manager in the Same Department

The organizational relationship between the safety and risk management departments is an issue under debate in many industries. Some insurance industry sources believe that optimally the risk manager and safety manager should exist within the same department for maximum coordination. From

EXHIBIT 2-5
ORGANIZATIONAL RESPONSIBILITY FOR RISK MANAGEMENT

	Percent of Transit Agencies			
RISK MANAGEMENT ORGANIZATION	All Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Assistant General Manager	6	25	--	--
Legal Department	6	--	11	--
Financial and Administrative Services Department	64	75	89	--
County/Municipal Government Financial Department	24	--	--	100

the point of view of reducing losses in bus transit, this may be desirable and may in fact result in better communication. One study of the coordination of functional areas within transit agencies found that personnel are more likely to communicate horizontally within a department as compared with across departments or across the organization.

Among the transit agencies in the study, only the Denver RTD and Portland Tri-Met have placed their risk manager and safety manager within the same department. At Denver, the risk manager and safety manager both report to the legal department. At Tri-Met, the risk manager is in the financial services group, the safety manager is in the personnel services group, and both groups are organizationally subordinate to the director of financial and administrative services. At all other agencies the two responsibilities are in different departments.

2.2 RECOMMENDATIONS

The following recommendations are based on the findings and observations of the study and on comments received from representatives of the participating transit agencies:

2.2.1 ADOPT A MORE INTEGRATED APPROACH TO CONTROLLING LOSSES

At present, transit agency loss control programs are numerous, varied and growing. In addition to the traditional hiring, training and safety programs, there are increasing activities in the areas of drug and alcohol abuse, programs to reduce worker's compensation and risk management programs (insurance pools and other alternatives to traditional insurance). At most agencies the responsibility for loss control programs is very specialized. This has resulted in the development of narrowly targeted initiatives with little cross-departmental awareness of objectives or trends.

It makes sense for management to attempt to coordinate these many activities as well as to avoid any duplication of efforts by adopting a more integrated management approach. An integrated approach aims to focus all of the safety, hiring, training, drug and alcohol abuse prevention, wellness, risk management and other activities to achieve maximum reduction of agency losses.

2.2.2 ESTABLISH MEASURABLE LOSS REDUCTION GOALS

All the transit agencies in this study promote safe driving and working conditions and encourage their employees to be safety conscious. However, few of the agencies establish specific goals for reducing bus accident and industrial injury rates or the amount of associated losses. Few policy documents state specific loss reduction targets. Transit management could define understandable goals for loss reduction both in accident rates and dollar losses and demonstrate a commitment to achieving them. This commitment could be shown by establishing a timetable with milestones toward achieving a stated goal, and by assigning responsibilities to staff members. Several transit managers participating in this study agreed that the following are good candidates for loss reduction goals:

- Time between accidents/industrial injuries
- Miles between accidents/industrial injuries
- Improvement in rate of accidents/injuries over previous period.

The quantitative goals in each category must, of course, be based on the recent experience of each transit organization. As an example, MUNI set a goal of a 10 percent reduction in total days of industrial absenteeism of transit operators from 1987 to 1988. Such a goal could also be included in the work performance objectives of each department or section manager to provide added incentive for achievement.

2.2.3. INCREASE SHOP SAFETY TRAINING AND MONITORING

From data submitted by transit agencies in this study it was found that worker's compensation claims occur at an average rate of 20 claims per hundred operators and 44 claims per hundred mechanics. Mechanics experience a higher rate of on-the-job injuries because their work involves more actions that can lead to injury such as lifting heavy objects and the use of power tools. It was also observed that very little structured shop safety training is conducted and safety regulations are sometimes poorly enforced. It is recommended that shop safety instruction and monitoring be enhanced at those agencies where strong programs are not in place or where high rates of mechanic industrial injuries are experienced.

2.2.4 ASSIGN AUTHORITY TO MATCH THE RESPONSIBILITY FOR SAFETY FUNCTIONS

In several agencies in this study, persons with full time responsibility for safety appeared to lack the management support needed to accomplish their goals. Assigning the title of "Safety Officer" to a person with insufficient authority to enforce safety regulations will probably not significantly impact industrial accidents. Any responsibility for a loss control function must be accompanied by adequate authority to accomplish that function. At the same time, persons with responsibility and authority for safety and loss control should be held accountable for their plans and actions.

2.2.5 ENCOURAGE A COOPERATIVE DAY-TO-DAY WORKING RELATIONSHIP BETWEEN SAFETY AND RISK MANAGERS

At more than one transit agency it was found that the safety and risk managers did not have direct knowledge of what the other was tracking statistically even though both positions are concerned with reducing losses. Many of the transit agencies (70 percent) have designated some responsibility for safety to an individual outside of the operations and maintenance departments, and all of the agencies have risk managers. It would appear reasonable for these and other safety professionals at each agency to work more closely, both to eliminate any duplicated efforts and to identify opportunities for more meaningful safety and loss analysis that may have been missed in the past. Thus transit agencies should encourage more cooperation between the safety and risk management functions and consider co-locating these positions in the same department.

2.2.6 STRENGTHEN LOSS CONTROL RECORDKEEPING

Recordkeeping on losses and accidents is surprisingly weak among some transit agencies. For example, less than one-half of the transit agencies were able to provide information on worker's compensation claims by linehaul bus operators and mechanics for the three year period 1985-1987. Also, monthly performance reports in many safety and loss control program areas are not required by many transit managers. Transit agencies should improve their recordkeeping as well as their monitoring of accidents, claims and losses.

Along with enhanced recordkeeping, transit agencies can better analyze their performance and identify needed changes in current procedures. For example, when an increase in the rate of industrial injuries resulting from employee error is promptly identified, management can immediately focus attention on the problem before it becomes more serious. However if timely information about injury rates is not routinely available, as was seen at several of the agencies, management may be unaware of a potential problem.

2.2.7 EVALUATE THE RESULTS OF LOSS CONTROL ACTIVITIES

The total expenditures for programs to control losses were compared among the 17 transit agencies. It was found that agencies with the highest losses, as a group, did not pay a significantly lower amount for loss control programs than a group of agencies with low losses. Both groups spend less than one percent of total operating expenses on safety and loss control programs. The average total expenditures for the two groups were also very close. This relationship suggests that increasing program expenditures will not necessarily lead to a decrease in losses. Rather, it is more important to evaluate the results of loss control activities. Tracking systems can be implemented that are capable of evaluating the relative effectiveness of different loss control practices.

2.2.8 ASSUME MORE CONTROL OVER SAFETY RELATED FUNCTIONS

It was observed that county/municipal agencies in this study have relatively high rates of accidents, claims and losses. County/municipal transit agencies may have difficulty controlling their losses partly because some functions which affect safety performance are centralized at the county or city level. For example:

- Some county/municipal transit managers were unable to cite the drug testing policy, test criteria or location of testing, and responded that "the city handles that function for all employees."

- Standardized civil service hiring procedures are used by some counties and cities to hire transit operators and mechanics. Due to the unique demands of urban bus driving, the standardized civil service tests may not be suitable for selecting the best candidates for bus operator/mechanic positions.

- Administration of worker's compensation and liability claims is centralized in most city and county governments. Detailed analysis of trends in claims resulting specifically from bus transit operations is seldom performed. Managers at these transit agencies were noticeably less knowledgeable about the extent of worker's compensation losses from transit operations than their counterparts in regional or contractor managed agencies.

It is evident that in order to reduce losses, county/ municipal agencies must first become more informed about them. Transit managers need detailed and timely reports on accidents, claims frequency and causes. Additionally, county/municipal transit agencies should seek to assume more control over the process of hiring operators and mechanics and other key functions related to safety and reducing losses.

* * * * *

This chapter has summarized the key observations and recommendations of the study. Detailed findings are presented in the remainder of the report. The next chapter defines the total cost of risk among the 17 transit agencies studied.

3.0 TOTAL COST OF RISK

The development of effective loss control strategies requires a thorough understanding of the total cost of risk. This chapter defines the total cost of risk and the factors that comprise risk for the 17 transit agencies in this study. The chapter is organized into five topics areas:

- Definitions
- Methodology
- The total cost of risk
- The cost of losses
- The cost of activities to control losses.

Each topic is discussed below.

3.1 DEFINITIONS

The cost of risk is defined as the sum of losses due to risk plus the administrative costs to control risk. It includes losses paid and three types of loss control activities:

- Losses. Losses are the payments made by the transit agency for injuries and damages from bus, passenger and industrial accidents.

- Safety and Loss Control Program Costs. The cost of risk includes the costs of programs to reduce risk. These include safety, hiring, training, anti-drug and worker's compensation reduction programs.

- Claims Administration and Risk Management. A necessary loss control activity is the processing of injury claims that result from bus and industrial accidents. The cost of risk also includes all risk management activities such as reserving funds against claims and procuring insurance.

- Premiums. Insurance premiums are paid by many transit agencies for commercial insurance against risk.

3.2 METHODOLOGY

In this analysis, the cost of risk is expressed as a percent of operating expenses rather than as actual dollars. The variable, percent of operating expenses, provides a tool for combining and averaging expenses among transit agencies of varying sizes. All the expenses that make up each agency's cost of risk (losses paid, safety and loss control program expenses, claims administration, risk management and premium payments) are out-of-pocket expenses and can be summed and compared with the total operating expense for the year. This is one way to depict relative losses and other costs of risk for a diverse group of transit agencies; it is a fairer measure than dollar expenditures which are naturally disproportionate due to differences in agency size.

The use of "percent of total operating expenses" also permits the accounting of all risk related expenses in one year--the year in which they occur. The precipitating event (bus accident, industrial injury) may have occurred one or more years previous, but it is the year in which the settlement is made that the transit agency experiences the financial loss. Alternative measures, such as cost per mile or cost per manhour, raise questions about which year the losses should be compared with. Should dollar losses per mile be compared with the mileage achieved during the year in which the accident occurred or during the year in which a settlement was reached with the plaintiff? The records of most transit agencies are not so detailed or flexible that settlements (of which there may be several per accident) can be identified, summed and related back to the date of the accident. Rather, taking a straight percent of expenses paid out for losses and loss control each year is a more direct method for measuring the total cost of risk.

3.3 THE TOTAL COST OF RISK

Exhibit 3-1 summarizes the total cost of risk for the three industry segments in this study. Briefly they are:

- Contractor Managed Transit Agencies. This segment includes the four participating transit agencies in which day-to-day management of the transit agency is performed under contract with a private company.
- Regional Transit Agencies. This segment includes the nine participating transit agencies that are managed by independent regional agencies. Direction to the agencies is given by a board of representatives from each local jurisdiction receiving transit services.
- County/Municipal Transit Agencies. This segment includes the four transit agencies that are organizationally part of a larger county or municipal government agency. Direction to the transit agencies is provided by the government agency or department, the county board or the mayor.

As shown in Exhibit 3-1, the total cost of risk ranges from 4.44 to 5.22 percent of operating expenses for the three study segments, with an average of 4.85 percent for all the transit agencies combined. The exhibit also shows the distribution of this cost among the five principal elements of risk: losses,

EXHIBIT 3-1
THE COST OF RISK AMONG 17 TRANSIT AGENCIES

ELEMENTS IN THE TOTAL COST OF RISK	Mean Percent of Operating Expenses			
	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Transit Agencies	County/ Municipal Transit Agencies
Losses	2.68	2.37	2.10	3.61
Safety and Loss Control Program Cost	0.62	0.70	0.60	0.57
Claims Handling and Risk Management Costs	0.71	0.84	0.86	0.38
Premiums	0.84	1.31	0.88	0.62
Total Cost of Risk	4.85	5.22	4.44	5.18

safety and loss control programs, claims handling, risk management and premiums. These elements are discussed in greater detail below.

3.4 THE COST OF LOSSES

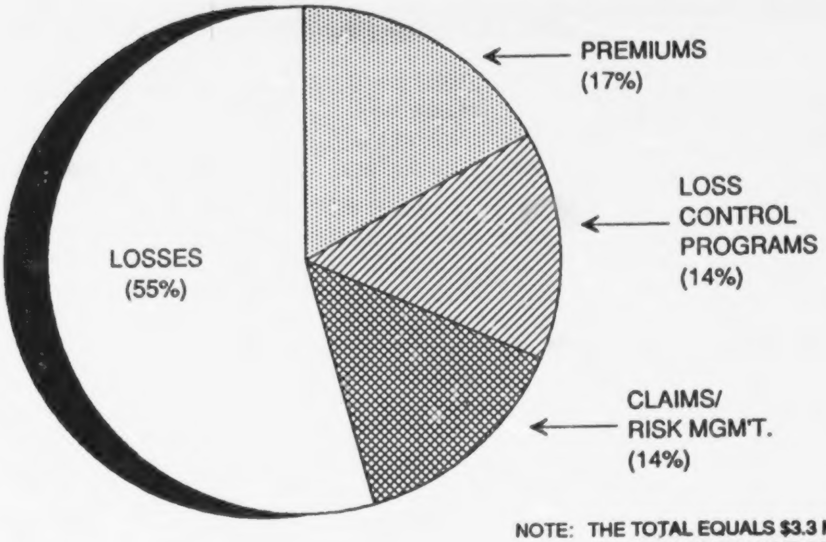
Losses are the largest element in the total cost of risk and a potential source of significant cost savings. As shown in Exhibit 3-1, losses comprise 2.7 percent of a transit agency's total operating expenses and represent 55 percent (see Exhibit 3-2) of the total cost of risk. The areas of large loss include payments for claims arising from bus accidents and from industrial injuries. These offer some potential for additional cost reduction.

3.4.1 Accident Claims

Bus accidents are the leading source of claims against transit agencies. Settlement of these claims typically results in losses greater than those associated with any of the other loss areas.

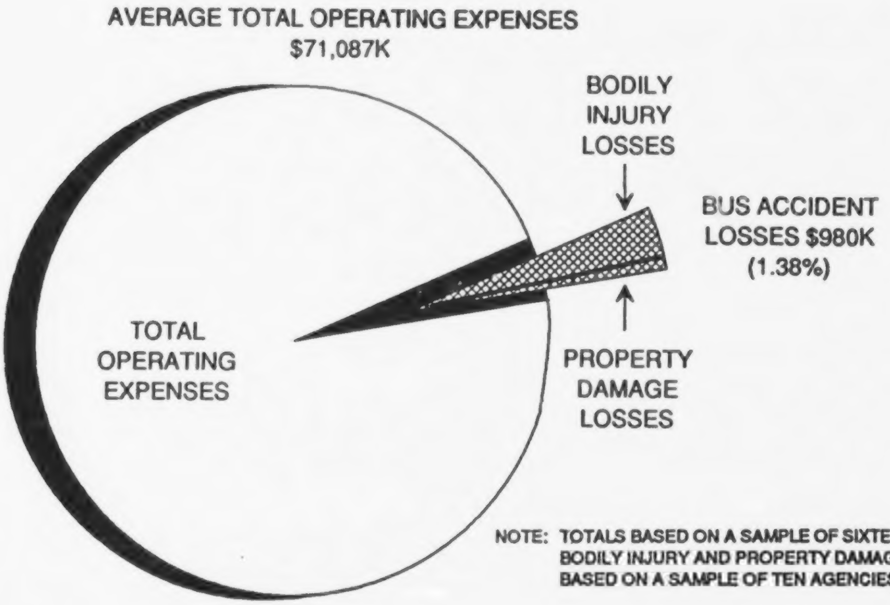
The average annual loss from bus accidents for the agencies studied is approximately $981,000. As shown in Exhibit 3-3, these payments are equivalent to 1.38 percent of total operating expenses. Of total average payments, 81 percent are attributable

EXHIBIT 3-2
ELEMENTS IN THE TOTAL COST OF RISK



NOTE: THE TOTAL EQUALS $3.3 MILLION OR 4.9 PERCENT OF AVERAGE TRANSIT OPERATING EXPENSES

EXHIBIT 3-3
BUS ACCIDENT LOSSES IN RELATION TO TOTAL OPERATING EXPENSES



NOTE: TOTALS BASED ON A SAMPLE OF SIXTEEN AGENCIES, BODILY INJURY AND PROPERTY DAMAGES DISTRIBUTION BASED ON A SAMPLE OF TEN AGENCIES to bodily injuries incurred as a result of the accident and 19 percent are paid for property damage.

Most transit agencies grade bus accidents as either preventable or non-preventable based on guidelines developed by the National Safety Council. Although the majority of bus accidents (71 percent) are graded non-preventable by bus operations/safety supervisors, most transit agency managers agree that there is still room for improvement in accident frequency.

3.4.2 Worker's Compensation Claims

Industrial injuries are the second largest but fastest growing source of losses. The average number of industrial injuries is less than the number of bus accidents (i.e., an average of 293 industrial injuries per year versus 1,105 bus accidents per year). However, the losses incurred from settling worker's compensation claims for industrial injuries are only slightly lower than losses resulting from bus accidents. The transit agencies in this study spend an average of $917,000 per year on worker's compensation claims compared with $981,000 per year on bus accident claims. Furthermore, average payouts for industrial injuries rose 16 percent from 1985 to 1987 compared with a 12 percent increase in average bus accident claim payments.

3.4.3 Other Losses

Other smaller areas of loss include transit property exposures, general liability and professional liability. These types of losses comprise a very small part (0.03 percent) of total transit operating expenses and offer little further cost reduction opportunities.

- Property Exposures. Losses reported by the transit agencies in the area of property exposure are relatively small, averaging $14,350 per year.

- General Liability. A limited number of premises liability claims and personal injury claims have been filed against some of the transit agencies resulting in an average annual loss of $6,300 per agency.

- Professional Liability. Reportedly, none of the agencies studied have incurred losses over the last three years due to errors by professional staff or wrongful acts of public officials.

3.5 THE COST OF ACTIVITIES TO CONTROL LOSSES

Transit agency activities to control losses include 1) safety and loss control programs, 2) claims handling and risk management and 3) insurance premiums. Total expenditures in these areas vary by agency size and the specific content of loss control programs. Total expenditures average 2.2 percent of operating expenses or approximately $1.6 million per year per agency. Each of the three areas of expenditure is reviewed below.

3.5.1 Safety and Loss Control Programs

Expenditures for safety and loss control programs include the salaries of safety and loss control staff, training, drug testing, supplies and special equipment. Exhibit 3-4 shows that average annual expenditures for safety, hiring, training and anti-drug programs are relatively uniform among the three industry segments, ranging from 0.56 to 0.70 percent of operating expenses. Annual expenditures for all the transit agencies average $430,400 per year.

EXHIBIT 3-4
THE COST OF SAFETY AND LOSS CONTROL ACTIVITIES

PROGRAM AREAS	Mean Percent of Operating Expenses			
	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transits Agencies
Safety	0.12	0.10	0.17	0.05
Hiring Operators/ Mechanics	0.10	0.12	0.12	0.05
Training Operators/ Mechanics*	0.36	0.43	0.28	0.44
Anti-Drug Program	0.03	0.05	0.03	0.02
Total Program Costs	0.61	0.70	0.60	0.56

*Mechanic Safety Training Only

3.5.2 Claims Administration and Risk Management

Annual expenditures for claims handling and risk management services average $556,200 per year per agency or .71 percent of total operating expenses. Claims administration, whether performed in house or contracted out, includes efforts to review and control losses as well as the physical processing of claims. Risk management costs include the salaries of managers who make decisions about insurance and other methods of financial protection against loss. Exhibit 3-5 shows the range in expenditures by transit agency segment.

EXHIBIT 3-5
THE COST OF CLAIMS HANDLING AND RISK MANAGEMENT ACTIVITIES

RISK MANAGEMENT FUNCTIONS	Mean Percent of Operating Expenses			
	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Claims Handling				
Worker's Compensation	0.18	0.19	0.28	0.07
Auto/Bus Liability	0.42	0.61	0.40	0.27
Risk Management	0.11	0.04	0.18	0.04
TOTAL	0.71	0.84	0.86	0.38

3.5.3 Premiums

Premiums are paid by only those transit agencies which have transferred risk to insurance companies. Relatively low total premiums is simply an indication that the agency has retained a large amount of its risk through self-insurance. Premiums consume an average .84 percent of transit operating expenses, with average annual expenditures of $601,600. Contractor managed transit agencies have a relatively higher percent of operating expenses assigned to the payment of premiums than the other segments. This is due partly to a greater tendency by other segments to self-insure for large amounts of risk. Also, according to agency representatives, one contractor managed agency carries high insurance limits and premiums at the request of the agency's risk averse owners.

* * * * *

In summary, the cost of risk is a significant part of transit operating costs averaging five percent of total expenses. The largest part of risk (55 percent) is the cost of direct payments for injuries from bus accidents or industrial injuries as well as other smaller losses. Expenditures for safety, loss control, claims administration, risk management and premiums account for the remaining part (45 percent) of the total cost of risk.

Based on a review of the total cost of risk at 17 bus transit agencies, reductions in loss payments may be feasible. Of the five areas of loss, worker's compensation appears most amenable to increased loss reduction efforts. Many industrial injuries are preventable through persistent loss control efforts. Although 70 percent of bus accidents are judged non-preventable by transit managers, some transit managers assert that bus accident rates may be reduced through greater emphasis on safe and defensive driving.

In the area of expenditures to control losses, some cost savings may also be achievable. Effective management and integration of safety and loss control programs could lead to fewer claims and losses, with consequent reductions in administration costs and premiums.

The following chapter presents a more detailed profile of the types of losses incurred by the 17 transit agencies. Subsequent chapters profile activities and expenditures to reduce losses.

4.0 PROFILE OF LOSSES DUE TO RISK

This chapter profiles the losses experienced by the bus transit agencies in each of the study segments. The topics discussed here include the frequency, severity (measured in cost) and causes of bus accidents and operator and mechanic industrial injuries. The comparatively smaller loss areas of property exposure, general liability and professional liability are also addressed. These discussions are preceded by some comments on the challenges of analyzing bus transit agency losses.

The chapter is organized into five topics:

- Observations on determining transit losses due to risk
- Overview of losses
- Bus accidents
- Industrial accidents
- Other losses due to risk.

Each topic is addressed below.

4.1 OBSERVATIONS ON DETERMINING TRANSIT LOSSES DUE TO RISK

Public transit agencies as a group are euphemistically referred to as "the transit industry." However, in reality each agency is distinct due to local public policies and practices. Given the diversity in operating environments of the agencies in this study, measuring the extent of losses often required careful analysis of differently formatted data. The following comments highlight some of the challenges in developing the findings for this chapter.

4.1.1 Sources of Loss Data

No uniform system for compiling, reporting and tracking historical accident, claim and settlement data exists in the bus transit industry. This lack of an industrywide data source makes it difficult to compare one agency or group of agencies to another. The Section 15 Annual Report (a.k.a., National Urban Mass Transportation Statistics) does provide detailed summaries of financial and operating statistics submitted to UMTA by all public transit agencies receiving Federal funds through the Section 9 block grant program. However, the accident classifications and related costs contained in the Section 15 Report are highly aggregated and do not adequately support the needs of this study.

4.1.2 Data Formats

The profile of losses in this chapter is based upon information provided directly by the 17 transit agencies visited. Each agency's data collection format is different from the others. Furthermore, all 17 of the agencies do not collect data in all areas addressed in this study. As a result, each analysis performed to develop this profile of losses may not include every transit agency participating in the study. Nevertheless, the profile is considered sufficiently complete to be representative of the loss areas typically experienced by these bus transit agencies.

4.1.3 Correlation Between Transit Accidents and Dollar Losses

The number of transit accidents, the responsibility for accidents and the amount of losses paid are not dependent variables. That is, the amount of a settlement may be affected more by statutes regarding legal liability, limitations on awards and other tort matters than by the severity of the accident. Also, judgement by transit management that an accident was "preventable" on the part of an operator does not connote legal responsibility in the traffic courts or necessarily affect the liability for the accident. In fact, transit agencies often are required to pay claims arising from "non-preventable" accidents for which their legal liability is questionable. Thus, the safety and loss indicators addressed in this chapter, including accident frequency, preventability, and amount of losses paid, are evaluated individually with no attempt made to measure correlation between them. To measure such a correlation, all of the transit agencies studied would have to be operating under the same statutory limitations.

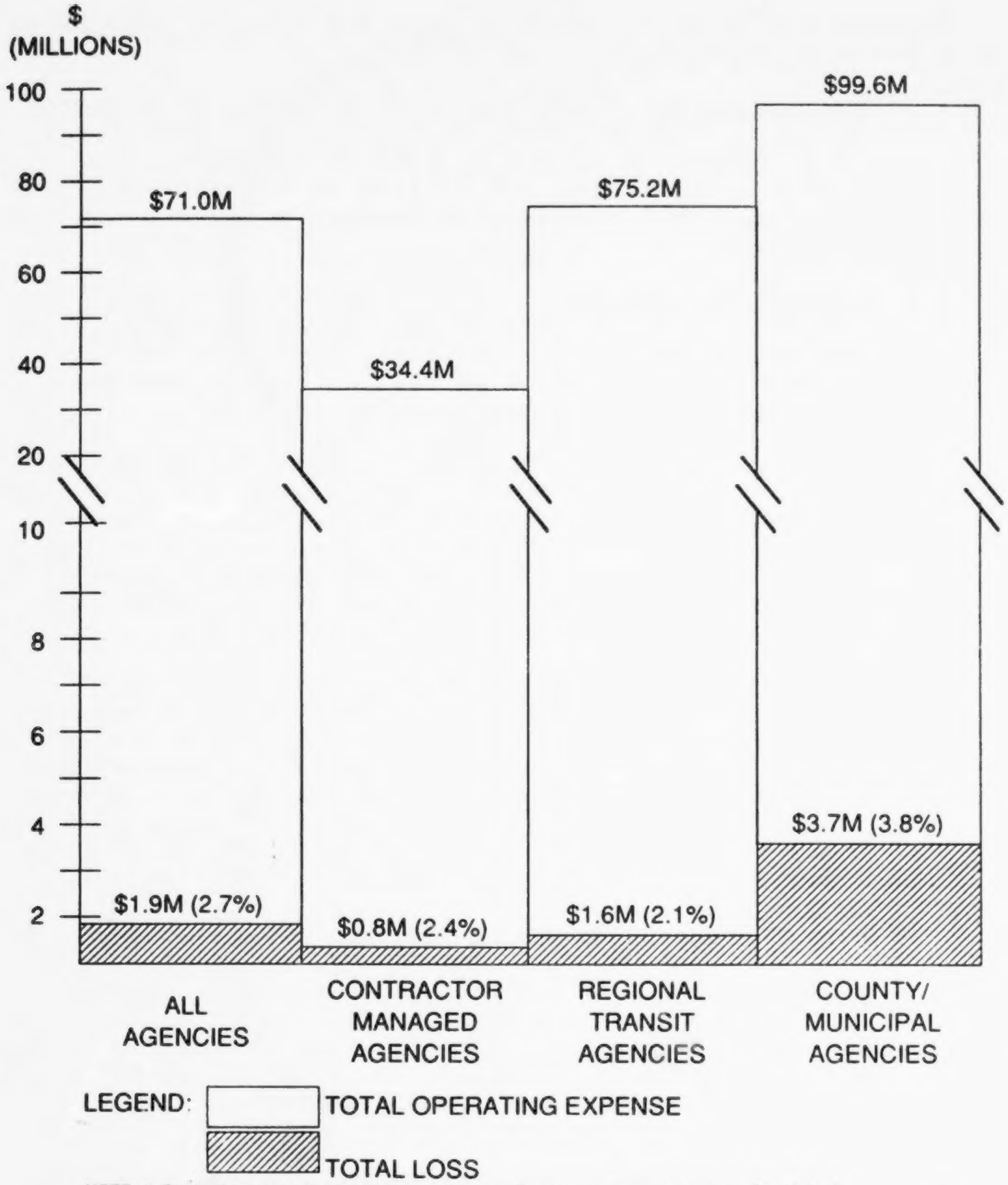
4.2 OVERVIEW OF LOSSES

As discussed in the previous chapter, loss due to accidents and claims is the largest component of a transit agency's total cost of risk. The following sections provide further details on the magnitude of these losses.

4.2.1 Losses Experienced by Transit Agencies

An average of over $1.9 million, or 2.7 percent of total operating expenses, is spent each year for the settlement of accident and liability claims. Exhibit 4-1 presents this overall distribution in relation to the three study segments. As is shown, the average for all agencies is primarily influenced by the county/municipal agencies which have a much higher ratio of losses to operating expenses than the contractor managed and regional transit agencies (i.e., 3.8 percent versus 2.4 percent and 2.1 percent, respectively).

EXHIBIT 4-1
BUS TRANSIT AGENCY LOSSES IN RELATION TO TOTAL OPERATING EXPENSES
(Three Year Average, 1985-1987)



NOTE: 1. Segment averages do not sum to overall average because segments are not equally weighted
2. Cleveland RTA not included.

When compared to other agency costs, losses (2.7 percent) are significantly less than that portion of operating expenditures set aside for labor and fringe benefits (70 percent).

4.2.2 Losses by Loss Area

There are five major areas of loss due to risk associated with a bus transit agency:

- Bus Accidents. This area covers losses of property damage or bodily injury to passengers, pedestrians, or other motorists caused by transit bus operation. Losses in this area are related to traffic accidents involving collisions and passenger accidents not due to collisions.

- Industrial Accidents. This area covers losses resulting from injuries sustained by employees while performing daily work routines. Injuries due to occupational accidents as well as unsafe working conditions or practices are also included.

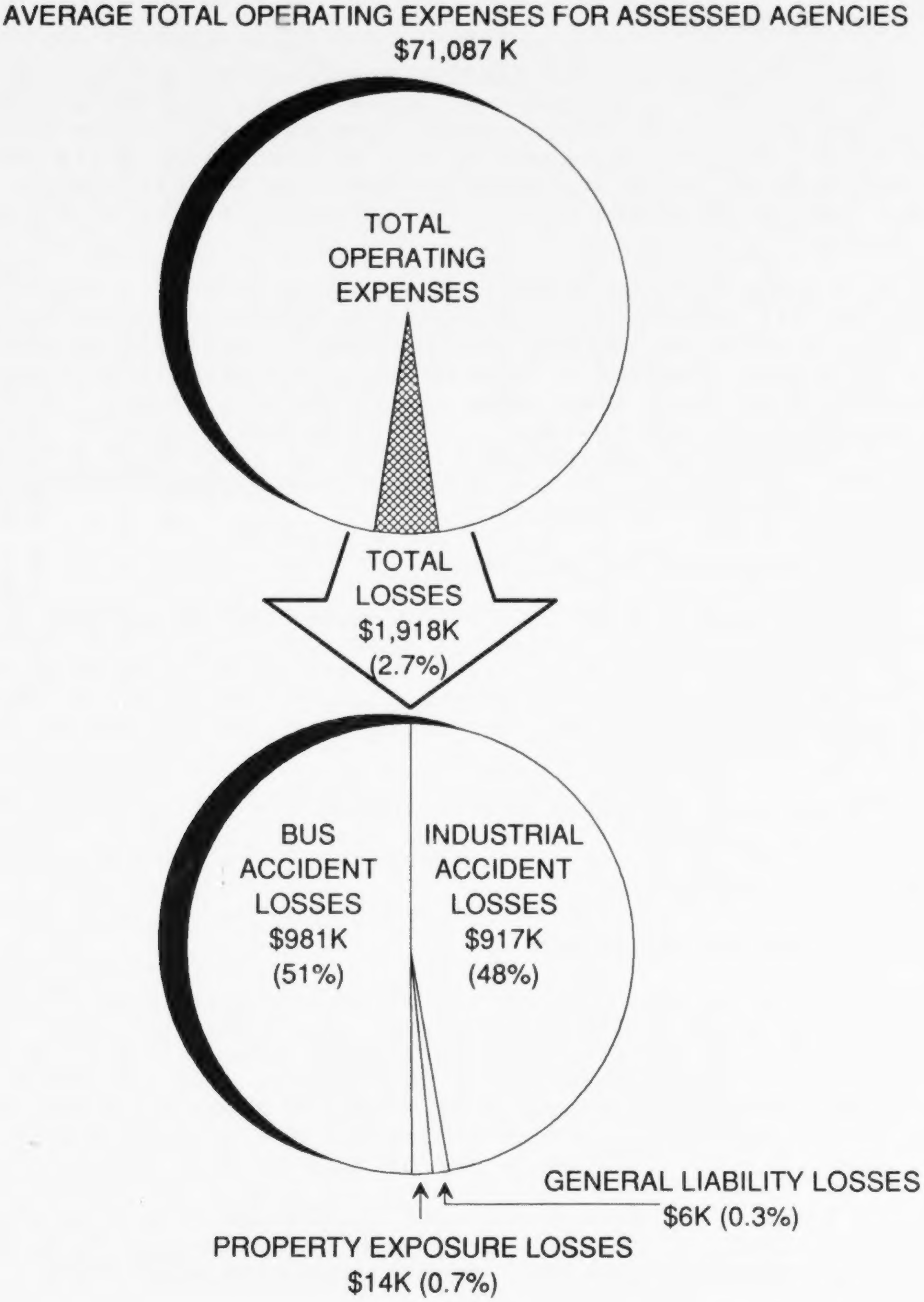
- Property Exposure. This area covers losses concerning physical damage to transit agency property as a result of vandalism, normal operation (e.g., breakdown of heating equipment), or natural disasters (e.g., fire, flood, lightning, windstorm, earthquake). Also included in this area are losses due to crime (e.g., burglary, robbery) and employee dishonesty.

- General Liability. This area covers losses not involving the operation or maintenance of a transit vehicle. Losses in this area are typically related to bodily injury or property damage to the general public resulting from the condition of the transit agency's facilities or the action of a transit agency employee. Other types of losses included in this area concern advertiser's liability, personal injury liability (e.g., libel, slander), and contractual liability (e.g., lease agreements, purchase orders).

- Professional Liability. This area covers losses encountered by directors and officers in managing the day-to-day operations. Professional liability losses include errors or omissions by the legal or fiduciary staff and wrongful acts by administrators (e.g., mishandling of employee benefit funds).

Bus accidents and industrial accidents are typically the largest sources of loss. As shown in Exhibit 4-2, these two loss areas account for 99 percent of average annual losses. The

EXHIBIT 4-2
BUS TRANSIT AGENCY LOSSES BY LOSS AREA IN RELATION TO TOTAL OPERATING EXPENSES
(Three Year Average, 1985-1987)



property exposure and general liability loss areas combine to make up the remaining 1 percent. While it is considered a potential area of loss, no professional liability losses have been recorded by the agencies in the study.

4.3 BUS ACCIDENTS

Bus accidents are the leading source of claims against the transit agencies. Settlement of these claims typically results in losses greater than those associated with any of the other loss areas. While the causes of bus accidents are quite varied, the majority of these accidents reviewed by transit agency supervisors were deemed non-preventable on the part of the bus operators.

According to interviews with managers at the 17 transit agencies, all of the agencies insist on mandatory reporting of all accidents no matter how small or seemingly insignificant. This precaution assists a transit agency in defending itself against claims where there otherwise might not be any documentation of the accident. Not withstanding such precautionary policies, accident reporting procedures are not standardized. Thus, the quality of accident reporting may vary among the transit agencies.

4.3.1 Frequency of Bus Accidents

Transit agencies in this study experience an average of 1,105 bus accidents per year. As shown in Exhibit 4-3, this annual average is equivalent to a bus accident frequency rate of 75 accidents per million revenue miles. In addition, it shows that the accident rate has been decreasing over the three-year period of 1985-1987.

The majority of these bus accidents are traffic-related (75 percent) as opposed to passenger-related (25 percent). The following discussion provides further insights concerning these types of bus accidents.

(1) Traffic Accidents

Traffic accidents occur at an average annual rate of 56 accidents per million revenue miles. These types of accidents involve collisions between agency buses and other vehicles, fixed objects, or pedestrians. Collisions with other vehicles are much more frequent than the other types of collisions. As shown in Exhibit 4-4, 85 percent of all agency traffic accidents are of this type.

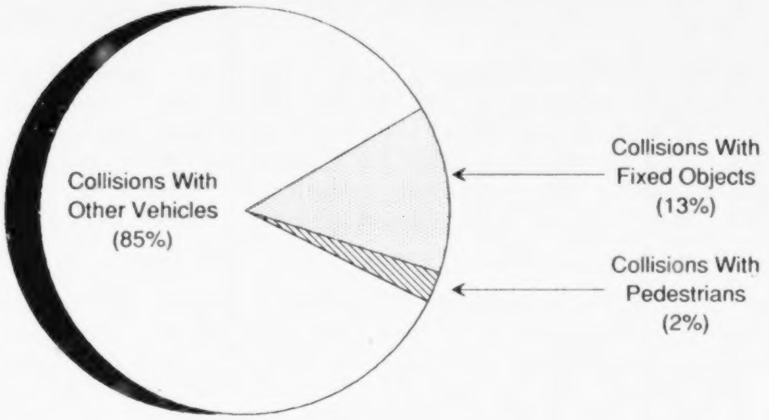
While the distribution of traffic accidents by the three types of collisions is relatively consistent among the study segments, regional transit agencies experience

EXHIBIT 4-3

BUS ACCIDENT VOLUME AND FREQUENCY
(THREE YEAR AVERAGE, 1985-1987)

Accident Type	# Of Accidents		Accidents Per Million Revenue Miles		
	Three Year Average		1985	1986	1987
Traffic Accidents	829	56 (75%)	59	53	52
Passenger Accidents	276	19 (25%)	23	20	19
Total	1,105	75	82	73	71
• # of Agencies Included	• 16		• 15 (traffic) 13 (passenger)	• 15 (traffic) 13 (passenger)	• 15 (traffic) 13 (passenger)
• # of Revenue Miles	• 14.8 million		• 15.3 million (traffic) 15.2 million (passenger)	• 15.6 million (traffic) 15.4 million (passenger)	• 15.5 million (traffic) 15.2 million (passenger)

EXHIBIT 4-4
TRAFFIC ACCIDENT FREQUENCY: ACCIDENTS PER MILLION REVENUE MILES
(Three Year Average, 1985-1987)



NOTE: BASED ON A SAMPLE OF THIRTEEN AGENCIES

ACCIDENT TYPE	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Collision With Other Vehicle	44 (85%)	50 (88%)	36 (82%)	56 (89%)
Collision With Fixed Object	9 (13%)	6 (10%)	7 (16%)	6 (9%)
Collision with Pedestrian	1 (2%)	1 (2%)	1 (2%)	1 (2%)
Total	54	57	44	63
# of Agencies Included	13	3	7	3
# of Revenue Miles (in millions)	17.4	9.1	19.2	21.7

NOTE: Accident frequency by collision type was not available from all agencies in the study.

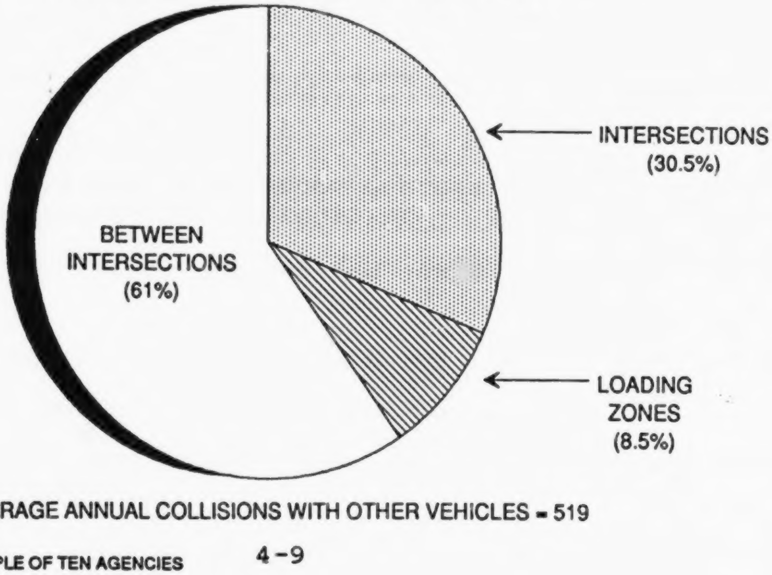
significantly fewer collisions with other vehicles than the other two segments. As Exhibit 4-4 also shows, the average annual number of collisions with other vehicles for contractor managed agencies and county/municipal agencies is at least 50 per million revenue miles, whereas regional transit agencies average just 36 per million revenue miles.

Collisions with other vehicles primarily occur in one of the following three locations:

- Intersections. This location covers collisions while the bus is turning at or crossing an intersection.
- Between Intersections. This location covers collisions while the bus is operating along its route. Specifically, it includes head-on collisions, sideswipes, angle hits with a vehicle pulling to or from a curb, and rear end collisions.
- Loading Zones. This location covers collisions while the bus is pulling into or away from the loading zone as well as standing in the loading zone.

Collisions between intersections are the most frequent traffic accident of this type. As shown in Exhibit 4-5, this location accounts for 61 percent of all collisions with other vehicles.

EXHIBIT 4-5
LOCATION OF COLLISIONS WITH OTHER VEHICLES
(Three Year Average, 1985-1987)



AVERAGE ANNUAL COLLISIONS WITH OTHER VEHICLES = 519

NOTE: BASED ON A SAMPLE OF TEN AGENCIES

(2) Passenger Accidents

Passenger accidents occur at an average annual rate of 19 accidents per million revenue miles -- almost 65 percent less frequent than traffic accidents. These types of accidents involve riders while boarding, on-board, or alighting the bus. These accidents are not due to collisions, but rather to passengers tripping in the bus stepwell, falling during sudden bus movements or being caught in the bus doors. Exhibit 4-6 presents the distribution of these three types of occurrences. As shown, over 52 percent of these accidents involve passengers sitting or standing on-board the buses.

Exhibit 4-6 also shows that the regional transit agencies and county/municipal agencies have almost identical frequency rates in each of the passenger accident categories. In addition, their passenger accident rates are, on average, less than the passenger accident rates of contractor managed agencies.

4.3.2 Severity of Bus Accidents

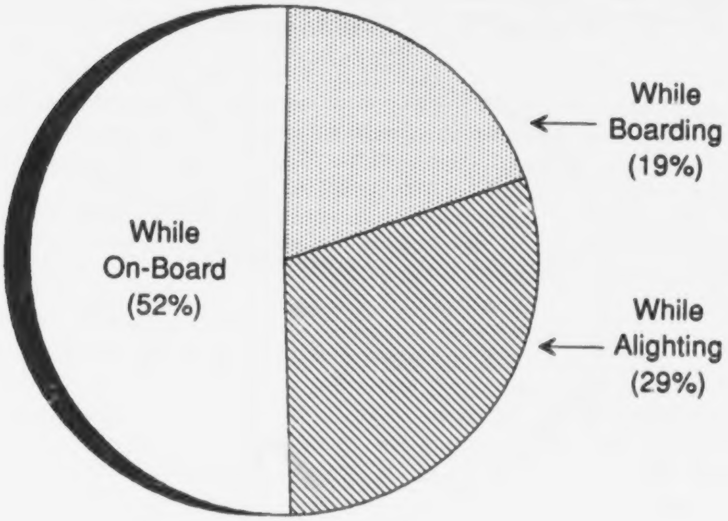
The average annual loss from bus accidents is approximately $981,000. As shown in Exhibit 4-7, these payments are equivalent to 1.38 percent of total operating expenses. On average, contractor managed agencies spend the least on bus accident losses at $430,000 per year, while county/municipal agencies spend the most at over $2 million per year. Regional transit agency losses of $896,000 are relatively close to the average annual loss for all agencies. Exhibit 4-7 also shows that 81 percent of these payments are attributable to bodily injuries incurred as a result of bus accidents. The remaining 19 percent of these losses are paid for any property damage resulting from the accidents.

Only five transit agencies were able to supply loss information in relation to closed bus accident claims. However, this limited sample of claim and settlement data does provide an order-of-magnitude perspective on the severity of losses due to bus accidents. The average settlement cost of a closed claim is approximately $2,500. Additional findings are as follows:

- Settlements for bodily injury claims range from $1,500 to $5,000

- Settlements for property damage claims range from $500 to $1,000.

EXHIBIT 4-6
PASSENGER ACCIDENT FREQUENCY: ACCIDENTS PER MILLION REVENUE MILES
(Three Year Average, 1985-1987)

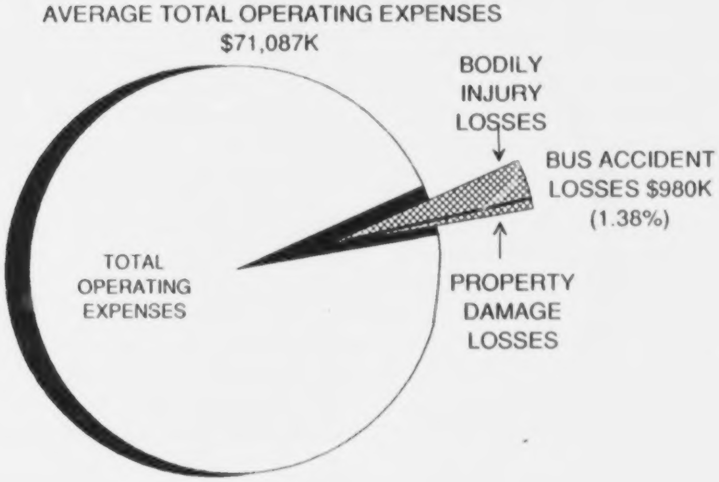


NOTE: BASED ON A SAMPLE OF TWELVE AGENCIES

ACCIDENT TYPE	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
While Boarding	4 (19%)	7 (24%)	3 (16%)	4 (21%)
While On Board	11 (52%)	14 (48%)	10 (56%)	10 (53%)
While Alighting	6 (29%)	8 (28%)	5 (28%)	5 (26%)
Total	21	29	18	19
# of Agencies Included	12	3	6	3
# of Revenue Miles (in millions)	17	9.1	18.6	21.7

NOTE: Passenger accident frequency by category was not available from all agencies in the study.

EXHIBIT 4-7
BUS ACCIDENT LOSSES IN RELATION TO TOTAL OPERATING EXPENSES
(Three Year Average, 1985-1987)



NOTE: TOTALS BASED ON A SAMPLE OF SIXTEEN AGENCIES, BODILY INJURY AND PROPERTY DAMAGES DISTRIBUTION BASED ON A SAMPLE OF TEN AGENCIES

BUS ACCIDENT LOSS CATEGORIES	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Bodily Injury Losses	$795K(81%)	$381K(89%)	$721K(80%)	$1,636K(80%)
Property Damage Losses	$186K(19%)	$49K(11%)	$175K(20%)	$ 416K(20%)
Total	$981K	$430K	$896K	$2,052K
Percent of Operating Expenses	1.5%	1.7%	1.3%	1.6%
# of Agencies Included	10	3	4	3

NOTE: Losses for bodily injury and property damage were not available from all agencies in the study.

It should be noted that claims from accidents resulting in a fatality or some form of a disability will typically have much larger settlements. For example, some of these types of bus accident claims have recently been settled for amounts ranging from $100,000 to over $1 million (see Exhibit 4-8). However, while these catastrophic accidents obviously do occur, the frequency rate is relatively low. This conclusion is based on the following transit agency statistics compiled for the last three years.

- A total of 49 fatalities were reported by ten of the transit agencies; three other transit agencies reportedly had none. Accordingly, each agency can expect at least one fatality on an annual basis as a result of bus transit operation. In relation to agency operating statistics, this rate is also equivalent to one fatality every 13.5 million revenue miles and one fatality every 31.2 million riders.
- A total of 74 claims were settled for amounts in excess of $50,000. Ten of the eleven transit agencies providing information averaged three or fewer of these high loss claims each year; the one exception averaged 11 claims of this type. This information translates into an annual agency average of at least two claims in excess of $50,000. Such an average is typically less than 1 percent of bus accident claims received by an agency.

EXHIBIT 4-8
SAMPLE OF RECENT LARGE CLAIM SETTLEMENTS

Accident	Claim	Settlement
Claimant run over by bus	Payment for numerous surgical procedures to reconstruct several internal organs	$1,100,000
Claimant injured on wheelchair lift	Payment for the loss (amputation) of leg	$350,000
Bicyclist collided with bus	Payment for accidental death	$125,000

NOTE: Transit agencies are not always found negligent or liable yet may still be required to pay damages and jury determined settlements (i.e. an agency may "win" the case and still be instructed to pay $750,000).

4.3.3 Causes of Bus Accidents

Most transit agencies grade bus accidents as either preventable or non-preventable based on guidelines developed by the National Safety Council (NSC). These guidelines, which are used by a wide range of industries, are summarized below.

- A non-preventable accident is one in which the bus operator did everything possible to prevent the accident.

- A preventable accident is one in which the bus operator did not take the appropriate precautions necessary to prevent the accident from occurring.

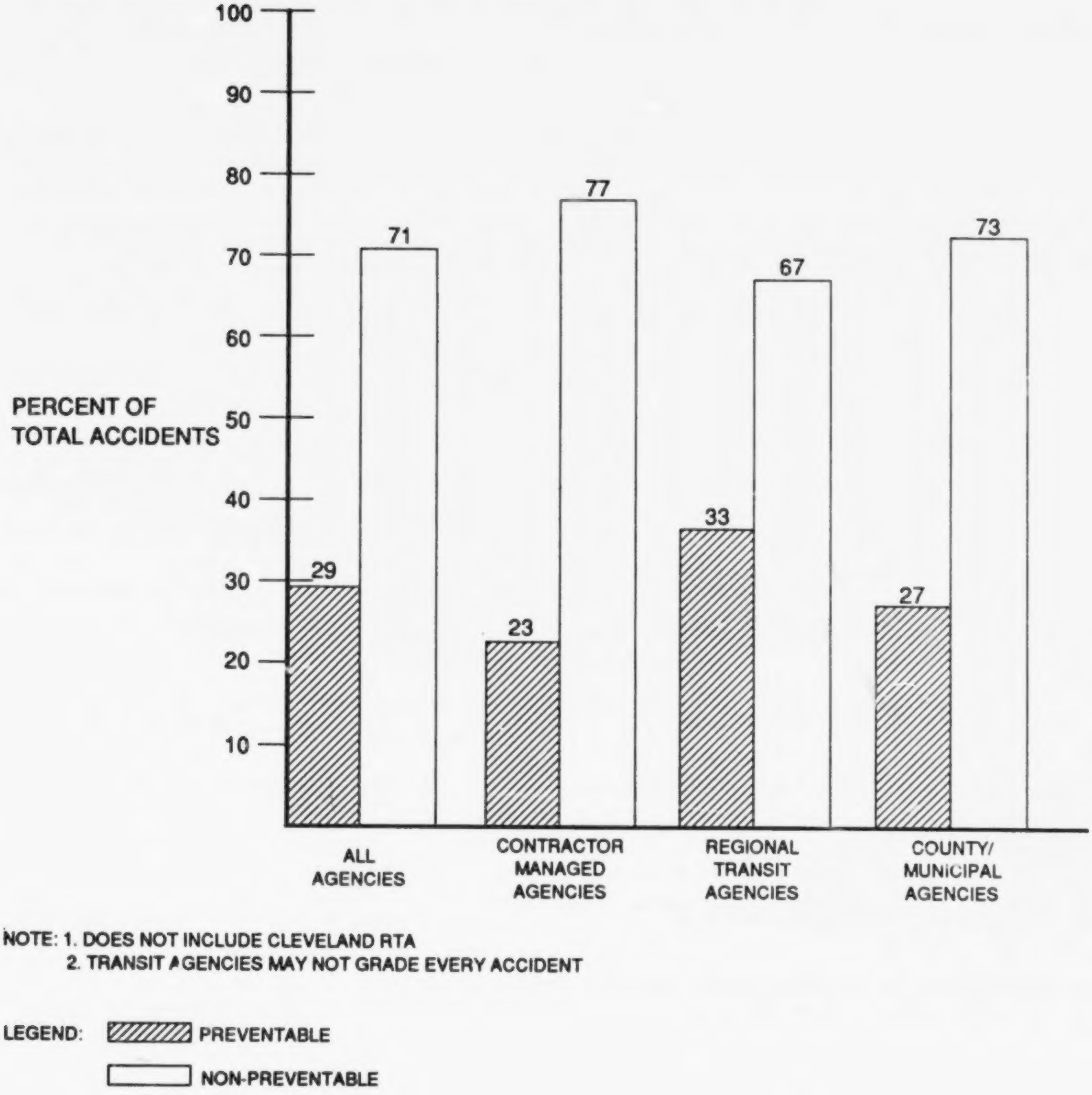
As shown in Exhibit 4-9, the majority of bus accidents (71 percent) are graded non-preventable by bus operations/safety supervisors. While it also shows that regional transit agencies in this study have more preventable accidents than the other two segments, it should be remembered that the NSC guidelines are quite broad and, therefore, subject to much interpretation. As a result, differences in preventability rates may occur simply because some transit agencies grade accidents more strictly than others.

The specific causes of bus accidents are not typically tracked on a case-by-case basis. However, interviews with key transit agency personnel proved useful in identifying those factors contributing to bus accidents. A sample of the frequent types of preventable and non-preventable bus accidents and their typical causes are presented in Exhibit 4-10.

Overall, the exhibit shows that most preventable accidents are directly attributable to bus operator negligence, while most non-preventable accidents are due to passenger carelessness or other vehicle driver negligence. Rear end collisions and collisions at intersections involving improper turning on the part of both operators and other drivers were mentioned most prominently. An interesting finding is that bus operators exceeding the speed limit and mechanical bus defects were never stated as typical causes.

While substance abuse is not listed as a potential cause, it may be a contributing factor in some accidents. However, until the recent implementation of transit agency drug and alcohol testing policies, there was no way to confirm this suspicion or to determine the extent of the problem.

EXHIBIT 4-9
COMPARISON OF PREVENTABLE VS. NON-PREVENTABLE ACCIDENTS
(Three Year Average 1985-87)



NOTE: 1. DOES NOT INCLUDE CLEVELAND RTA
2. TRANSIT AGENCIES MAY NOT GRADE EVERY ACCIDENT

EXHIBIT 4-10
FREQUENT TYPES OF BUS ACCIDENTS AND THEIR CAUSES

ACCIDENT CATEGORY		TYPE OF ACCIDENT	TYPICAL CAUSES
PREVENTABLE	Passenger	• Passenger injured while on board	• Sudden stop or start
		• Passenger injured while boarding or alighting	• Operator closes door before passengers have completely entered or exited
	Traffic	• Rearend collision	• Operator following too closely, fails to stop in time
		• Collision at intersection	• Operator fails to allow adequate clearance for turn
		• Collision with fixed object (fire hydrant, newsbox, parked car, sign)	• Operator inattention
NON-PREVENTABLE	Passenger	• Passenger injured while boarding or alighting	• Passenger slips and falls
		• Passenger injured while on board	• Operator stops suddenly to avoid collision
			• Passenger not careful
	Traffic	• Rearend collision	• Other driver following too closely; fails to stop in time
		• Collision at intersection	• Other driver makes an illegal right turn in front of bus in loading zone
			• Other driver encroaching between bus and roadside at corner
		• Sideswipe collision	• Other driver opens door into passing bus

4.4 INDUSTRIAL ACCIDENTS

The number of industrial accidents is substantially less than the number of bus accidents experienced by transit agencies. However, the losses incurred from settling the associated worker's compensation claims are only slightly lower than those resulting from bus accidents. The causes for these types of claims are often related to the bus operator's or mechanic's carelessness or unsafe conditions in the workplace.

4.4.1 Frequency of Worker's Compensation Claims

Most worker's compensation claims are submitted by bus operators and mechanics. As Exhibit 4-11 shows, these two transit agency employee groups account for 94 percent of all claims filed.

Transit agencies examined typically receive between 50 and 500 claims for worker's compensation from bus operators and mechanics each year. As shown in Exhibit 4-12, these receipts equate to an annual average of 293 worker's compensation claims. This aggregate number of worker's compensation claims is almost 75 percent less than the average annual number of bus accidents. The relatively high number of bus accidents compared to work-related injuries and illnesses is not surprising given that:

- The transit agencies operate buses in congested urban service environments.
- Bus accident reports are often filed regardless of the extent of damage or injury (e.g., minor vehicles scrapes or "fender benders," minor bruises due to a passenger slipping on bus).
- All bus accidents do not result in a worker's compensation claim.

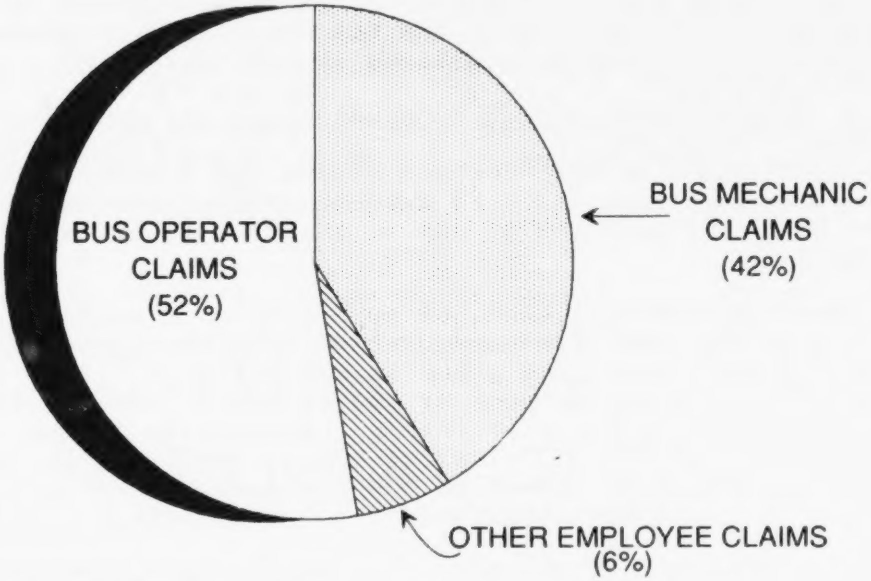
Available data suggests that worker's compensation claims for operators and mechanics have remained relatively stable over the last three years. Unfortunately, this trend cannot be substantiated with a high degree of accuracy because less than one-half of the transit agencies were able to provide the needed claims data for each of these years.

The following discussion provides further detail concerning workers' compensation claims in relation to employee type and body part injured.

(1) Worker's Compensation Claims by Employee Type

Several transit agency managers stated that, based on their experience, most claims are submitted by bus

EXHIBIT 4-11
DISTRIBUTION OF WORKER'S COMPENSATION CLAIMS BY EMPLOYEE TYPE

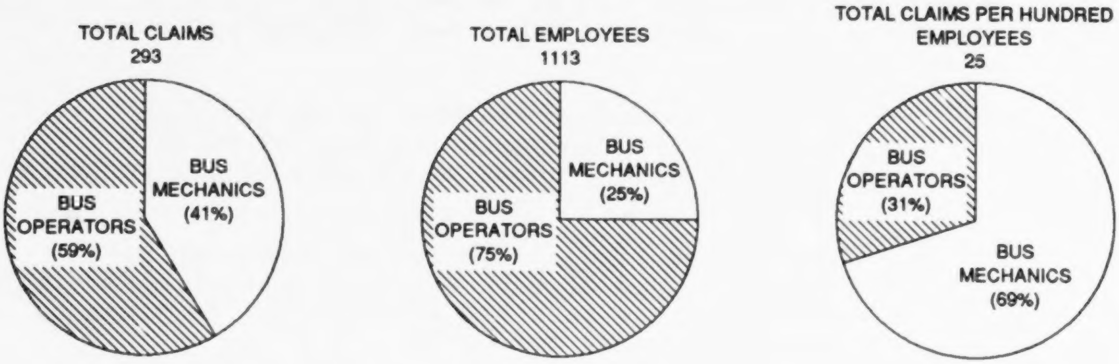


NOTE: BASED ON A SAMPLE OF FIVE AGENCIES

operators. As shown in Exhibit 4-12, bus operators do account for the highest volume of claims (59 percent). However, it also shows that the average number of operators is three times greater than mechanics. Based on the difference in staff size, the claims frequency rate of bus mechanics is more than double that of bus operators. Specifically, receipt of worker's compensation claims for these employee groups can be expected at an average rate of 44 claims per hundred mechanics and 20 claims per hundred operators. Many employees submit multiple claims in a single year, thus a one-to-one ratio of claims and employees cannot be assumed.

Each of the study segments have similar distributions between the frequency rates of operator and mechanic claims. In addition, the claims frequency rate for regional transit agencies is almost identical to that of the annual average for all agencies. However, county/municipal agencies have much higher rates than the regional transit agencies, while contractor managed agencies have much lower rates.

EXHIBIT 4-12
WORKER'S COMPENSATION CLAIMS VOLUME AND FREQUENCY BY EMPLOYEE TYPE
(Three Year Average 1985-1987)



	Total No. of Claims	Claims Per Hundred Employees			
CLAIM CATEGORY	All Agencies	All Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Operator Claims	172	20	12	21	25
Mechanic Claims	121	44	32	42	58
Total	293	25	17	24	33
No. of Agencies Included		12	3	7	2
Staff Size					
- Operators		837	500	1,015	718
- Mechanics		276	141	342	246
Total		1,113	641	1,357	904

NOTE: Claims frequency for operators and mechanics was not available from all agencies in the study.

(2) Worker's Compensation Claims by Body Part Injured

Worker's compensation claims submitted by bus operators and mechanics cover injuries to all parts of the body as shown in Exhibit 4-13. With few exceptions, the ranking of worker's compensation claims by body part is similar for bus operators and mechanics. Other key findings are summarized below.

- One of the most prevalent claims for both operators and mechanics is related to back injuries (i.e., about 25 percent of all worker's compensation claims).
- While hand/finger injuries are the next most frequent type of worker's compensation claim, this type of claim is filed almost twice as often by mechanics as by operators.
- Eye injuries account for 10 percent of overall claims and 12.5 percent of mechanic claims. These frequency rates are significantly higher than the national average of 5 percent as determined by the National Safety Council.
- Approximately 18 percent of all operator claims are related to shoulder and neck injuries. These type of claims, along with those related to the back, usually involve soft tissue injuries that are difficult to diagnose, treat, and correct in a timely manner.

In general, Exhibit 4-13 is also reflective of the claims experience of each study segment. A complete ranking of operator and mechanic injury claims by body part for each transit agency segment is presented in Exhibit 4-14.

4.4.2 Severity of Worker's Compensation Claims

The average annual loss from industrial accidents is approximately $917,000. As shown in Exhibit 4-15, these payments are equivalent to 1.29 percent of total operating expenses. This exhibit also shows that 56 percent of the industrial accident losses are paid in the form of compensation for lost wages. The remaining 44 percent of these losses are paid for employee medical expenses.

This average annual distribution of worker's compensation benefits for all agencies is comparable to the national average. According to 1987 statistics compiled by the National Council on

EXHIBIT 4-13
RANKING OF WORKER'S COMPENSATION BY BODY PART INJURED

OPERATORS AND MECHANICS			OPERATORS			MECHANICS		
BODY PART INJURED	AVG # OF CLAIMS PER YEAR	PERCENT OF TOTAL	BODY PART INJURED	AVG # OF CLAIMS PER YEAR	PERCENT OF TOTAL	BODY PART INJURED	AVG # OF CLAIMS PER YEAR	PERCENT OF TOTAL
BACK	57.1	24.3%	BACK	34.5	25.4%	HANDS, FINGERS	23.5	23.7%
HANDS, FINGERS	42.2	17.9%	HANDS, FINGERS	18.6	13.7%	BACK	22.6	22.7%
EYES	21.6	9.2%	NECK	13.7	10.1%	EYES	12.4	12.5%
NECK	18.0	7.6%	SHOULDER	10.6	7.8%	ANKLE,FEET	6.7	6.8%
ANKLE,FEET	15.3	6.5%	EYES	9.2	6.8%	KNEES	5.6	5.6%
SHOULDER	13.8	5.9%	ANKLE,FEET	8.5	6.3%	ARMS	5.1	5.1%
KNEES	13.3	5.6%	KNEES	7.7	5.7%	NECK	4.3	4.3%
ARMS	12.1	5.1%	ARMS	7.0	5.1%	HEAD	3.6	3.6%
HEAD	10.0	4.3%	HEAD	6.4	4.7%	LEGS	3.5	3.5%
LEGS	9.6	4.1%	LEGS	6.1	4.5%	SHOULDER	3.2	3.3%
TORSO, HIPS	7.5	3.2%	TORSO, HIPS	5.0	3.7%	TORSO, HIPS	2.5	2.5%
FACE	3.8	1.6%	FACE	2.6	1.9%	ELBOWS	1.6	1.6%
ELBOWS	3.5	1.5%	ELBOWS	1.9	1.4%	WRIST	1.3	1.3%
RESPIRATORY	2.2	1.0%	RESPIRATORY	1.2	0.9%	FACE	1.2	1.3%
WRIST	2.2	0.9%	ILLNESS	1.2	0.8%	RESPIRATORY	1.0	1.0%
ILLNESS	1.3	0.5%	WRIST	0.9	0.6%	SKIN	0.4	0.4%
CHEST	0.7	0.3%	CHEST	0.4	0.3%	CHEST	0.2	0.2%
SKIN	0.5	0.2%	EAR	0.4	0.3%	EAR	0.2	0.2%
EAR	0.5	0.2%	TOES	0.1	0.1%	ILLNESS	0.1	0.1%
TOES	0.2	0.1%	SKIN	0.1	0.0%	TOES	0.1	0.1%
GROIN	0.0	0.0%	GROIN	0.0	0.0%	GROIN	0.0	0.0%
TOTAL	235.3	100%	TOTAL	136.0	100%	TOTAL	99.4	100%

NOTE: 1. CLAIMS WITH BODY PART INJURED DESIGNATION OF MULTIPLE OR OTHER WERE NOT INCLUDED.

2. TOTALS MAY NOT SUM DUE TO ROUNDING.

EXHIBIT 4-14
RANKING OF WORKERS COMPENSATION CLAIMS FOR EACH STUDY SEGMENT

OPERATORS AND MECHANICS

BODY PART INJURED INJURED	CONTRACTOR MANAGED AGENCIES CLAIMS	REGIONAL TRANSIT AGENCIES OF CLAIMS	COUNTY/ MUNICIPAL AGENCIES CLAIMS	ALL AGENCIES	PERCENT OF TOTAL
BACK	15.22	78.23	56.50	57.10	24.26%
HANDS, FINGERS	20.00	57.11	30.50	42.15	17.91%
EYES	8.00	28.91	20.17	21.62	9.18%
NECK	7.56	20.28	26.83	18.00	7.65%
ANKLE,FEET	6.56	19.89	14.50	15.27	6.49%
SHOULDER	1.67	23.25	3.67	13.80	5.86%
ARMS	9.00	15.28	7.17	12.09	5.14%
LEGS	7.78	10.28	10.17	9.58	4.07%
KNEES	1.00	20.78	9.17	13.27	5.64%
HEAD	4.89	12.22	11.17	10.03	4.26%
TORSO, HIPS	0.00	13.16	2.00	7.54	3.20%
ELBOWS	0.00	6.11	0.83	3.48	1.48%
FACE	2.56	4.83	2.67	3.82	1.62%
WRIST	0.00	2.89	3.17	2.15	0.91%
RESPIRATORY	2.33	2.50	1.33	2.24	0.95%
SKIN	0.00	0.22	2.00	0.48	0.21%
CHEST	0.00	1.00	0.67	0.67	0.28%
ILLNESS	0.33	2.17	0.00	1.27	0.54%
EAR	0.00	0.67	1.17	0.58	0.25%
TOES	0.44	0.22	0.00	0.24	0.10%
GROIN	0.00	0.00	0.00	0.00	0.00%
TOTAL	106.67	312.98	320.83	235.39	100.00%

NOTE: 1. CLAIMS WITH BODY PART INJURED DESIGNATION OF MULTIPLE OR OTHER WERE NOT INCLUDED.

2. TOTALS MAY NOT SUM DUE TO ROUNDING.

EXHIBIT 4-14 (Continued)
RANKING OF WORKERS COMPENSATION CLAIMS FOR EACH STUDY SEGMENT

OPERATORS

BODY PART INJURED	CONTRACTOR MANAGED AGENCIES	REGIONAL TRANSIT AGENCIES	COUNTY/ MUNICIPAL AGENCIES	ALL AGENCIES	PERCENT OF TOTAL
BACK	9.11	47.06	34.83	34.48	25.36%
HANDS, FINGERS	8.44	25.14	14.33	18.62	13.69%
NECK	5.78	13.78	25.33	13.70	10.07%
SHOULDER	1.44	17.64	3.00	10.56	7.77%
EYES	3.67	12.44	7.67	9.18	6.75%
ANKLE,FEET	4.00	11.61	6.17	8.55	6.28%
KNEES	0.44	12.50	4.17	7.70	5.66%
ARMS	4.22	10.11	1.83	7.00	5.15%
HEAD	3.11	7.78	7.33	6.42	4.72%
LEGS	5.22	7.50	3.17	6.09	4.48%
TORSO, HIPS	0.00	8.94	0.83	5.03	3.70%
FACE	1.56	3.22	2.17	2.58	1.89%
ELBOWS	0.00	3.17	0.83	1.88	1.38%
RESPIRATORY	1.67	1.00	1.33	1.24	0.91%
ILLNESS	0.22	2.00	0.00	1.15	0.85%
WRIST	0.00	1.06	1.67	0.88	0.65%
CHEST	0.00	0.61	0.50	0.42	0.31%
EAR	0.00	0.50	0.50	0.36	0.27%
TOES	0.33	0.00	0.00	0.09	0.07%
SKIN	0.00	0.11	0.00	0.06	0.04%
GROIN	0.00	0.00	0.00	0.00	0.00%
TOTAL	61.22	212.47	177.83	136.00	100.00%

NOTE: 1. CLAIMS WITH BODY PART INJURED DESIGNATION OF MULTIPLE OR OTHER WERE NOT INCLUDED.

2. TOTALS MAY NOT SUM DUE TO ROUNDING.

EXHIBIT 4-14 (Continued)
RANKING OF WORKERS COMPENSATION CLAIMS FOR EACH STUDY SEGMENT

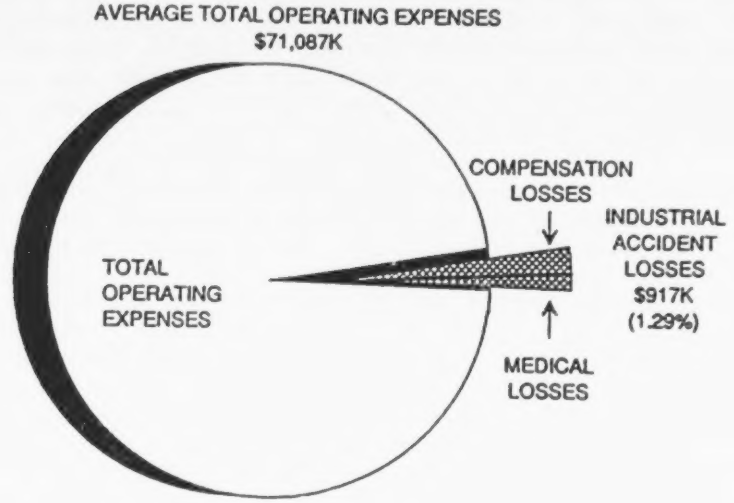
MECHANICS

BODY PART INJURED	CONTRACTOR MANAGED AGENCIES	REGIONAL TRANSIT AGENCIES	COUNTY/ MUNICIPAL AGENCIES	ALL AGENCIES	PERCENT OF TOTAL
HANDS, FINGERS	11.56	31.97	16.17	23.53	23.67%
BACK	6.11	31.17	21.67	22.61	22.74%
EYES	4.33	16.47	12.50	12.44	12.52%
ANKLE, FEET	2.56	8.28	8.33	6.73	6.77%
KNEES	0.56	8.28	5.00	5.58	5.61%
ARMS	4.78	5.17	5.33	5.09	5.12%
NECK	1.78	6.50	1.50	4.30	4.33%
HEAD	1.78	4.44	3.83	3.61	3.63%
LEGS	2.56	2.78	7.17	3.52	3.54%
SHOULDER	0.22	5.61	0.67	3.24	3.26%
TORSO, HIPS	0.00	4.22	1.17	2.52	2.53%
ELBOWS	0.00	2.94	0.00	1.61	1.62%
WRIST	0.00	1.83	1.50	1.27	1.28%
FACE	1.00	1.61	0.50	1.24	1.25%
RESPIRATORY	0.67	1.50	0.00	1.00	1.01%
SKIN	0.00	0.11	2.00	0.42	0.43%
CHEST	0.00	0.39	0.17	0.24	0.24%
EAR	0.00	0.17	0.50	0.18	0.18%
ILLNESS	0.11	0.17	0.00	0.12	0.12%
TOES	0.00	0.22	0.00	0.12	0.12%
GROIN	0.11	0.00	0.00	0.03	0.03%
TOTAL	45.44	142.83	143.00	99.39	100.00%

NOTE: 1. CLAIMS WITH BODY PART INJURED DESIGNATION OF MULTIPLE OR OTHER WERE NOT INCLUDED.

2. TOTALS MAY NOT SUM DUE TO ROUNDING.

EXHIBIT 4-15
INDUSTRIAL ACCIDENT LOSSES IN RELATION TO TOTAL OPERATING EXPENSES
(Three Year Average 1985-1987)



NOTE: TOTALS BASED ON A SAMPLE OF SIXTEEN AGENCIES, COMPENSATION AND MEDICAL DISTRIBUTION BASED ON A SAMPLE OF TEN AGENCIES

INDUSTRIAL ACCIDENT LOSS CATEGORIES	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Compensation Losses	$514K (56%)	$209K (72%)	$400K (57%)	$883K (52%)
Medical Losses	$403K (44%)	$ 83K (28%)	$303K (43%)	$824K (48%)
Total	$917K	$292K	$703K	$1,707K
Percent of Operating Expenses	1.2%	1.2%	1.0%	1.6%
# of Agencies Included	10	3	4	3

NOTE: Compensation and medical payments were not available from all agencies in the study.

Compensation Insurance, 1 Penn Plaza, New York, NY, earnings compensation now accounts for 60 percent of pay outs while medical costs account for the remaining 40 percent.

The distribution between compensation and medical payments for the regional transit agency and county/municipal agency segments are also similar to the national average. However, the portion of those benefits that are paid out for earnings compensation by contractor managed agencies are 20 percent higher than the national average.

Severe injuries are unusual at bus transit agencies. While it is not uncommon for an injury to keep an employee out of work for an extended period of time, most employees injured on the job actually lose no time from work. Based on a sample of five transit agencies, only 35 percent of the worker's compensation claims filed by bus operators and mechanics over the last three years have resulted in lost work days. Their average annual number of lost work days totalled approximately 2,800 (or 25 days per worker's compensation claim involving lost work days).

4.4.3 Causes of Worker's Compensation Claims

Despite the existence of safety manuals and the provision of safety training, injuries on the job still occur. While injuries by body part are typically well documented, consistent records are not maintained that document cause of injury. However, risk management staff familiar with their case loads can list the most frequent types of worker's compensation claims filed by bus operators and mechanics. The most common types of bus operator and mechanic worker's compensation claims and their causes, identified through interviews with risk managers, are summarized in Exhibit 4-16.

While the frequency rate of worker's compensation claims by body part are similar for bus operators and mechanics, the typical causes are often quite different. As Exhibit 4-16 shows, some claims are the result of occupational hazards (e.g., long periods of sitting in restrictive positions, constant bending and twisting). However, many claims can be attributed to unsafe work practices or unsafe work conditions.

Three of the transit agencies provided data that distinguished between injuries resulting from bus accidents and injuries not caused by bus accidents. Based on this data, only 34 percent of operator injuries are the direct result of a bus accident. The design of the drivers seat and work compartment is considered one of the leading sources of operator injuries and claims. Road surfaces and conditions along the route are also causes of these type of claims. While not separately listed, stress related to dealing with the public is often suggested as a

EXHIBIT 4-16
FREQUENT TYPES OF WORKER'S COMPENSATION CLAIMS AND THEIR CAUSES

ACCIDENT CATEGORY	TYPE OF CLAIM	TYPICAL CAUSES
Bus Operator	• Back	• Operation of non-power steering bus • Seats bottoming out • Bus accidents • Muscle strain due to long periods of sitting • Hitting potholes
	• Hands/wrist/ fingers	• Hand brake and steering wheel use • Striking against objects in drivers area • Tedious repetitive actions with hands (carpal tunnel syndrome)
	• Neck	• Bus accidents • Hitting potholes and turning head to check traffic
	• Shoulder	• Operating non-power steering bus
	• Knee	• Hit against farebox stanchion
Bus Mechanic	• Hand/fingers	• Improper tool use • Cuts and scrapes • Hitting against metal objects
	• Back	• Bending and twisting • Lifting of parts and equipment • Slipping and falling
	• Eye	• Improper goggle use
	• Ankle/feet	• Slipping and falling • Struck by falling objects
	• Arm/shoulder	• Improper tools use

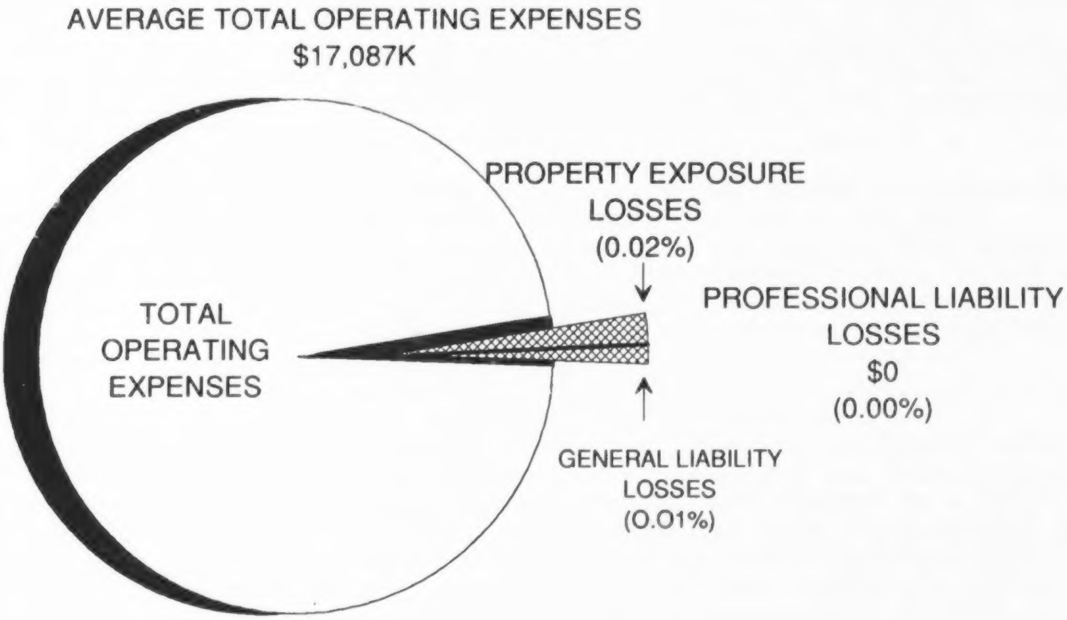
contributing factor in workplace injuries and illnesses among bus operators. However, very little is known about stress and its contribution to illness.

Most mechanic claims result from the failure to adhere to prescribed operating procedures. Improper equipment usage or material handling are frequently cited causes of these type of claims. Hazardous conditions in the workplace such as slippery surfaces were also mentioned on several occasions.

4.5 OTHER LOSS AREAS

As shown in Exhibit 4-17, property exposure, general liability, and professional liability losses comprise a very small part of operating expenses. However, transit agencies must still be conscious of the potential impact that these loss areas have on their total cost of risk. The following sections highlight transit agency loss experience in each of these loss areas.

EXHIBIT 4-17
PROPERTY EXPOSURE, GENERAL LIABILITY AND PROFESSIONAL LIABILITY LOSSES IN RELATION TO TOTAL OPERATING EXPENSES
(Three Year Average 1985-1987)



4.5.1 Property Exposures

Loss to the transit agencies examined in terms of property exposure is relatively low. Property loss payments average $14,350 per year, or less than 0.02 percent of total operating expenses.

Losses in this area primarily involve physical damage to the bus fleet and facilities due to normal operation. However, few claims are filed for this damage because loss estimates are typically less than the deductible. The other major exposures which result in claims and losses are summarized below.

(1) Natural Disasters

Natural disasters pose a constant threat of loss to transit agencies. Fire and wind have been the primary sources of loss in this area. Three transit agencies have reported bus fires resulting in losses ranging from $25,000 to $85,000 per bus. Wind damage to the rooftops of two agency buildings resulted in payouts of $1,000 and $10,000 each.

(2) Crime

A limited number of claims have been filed as a result of criminal acts such as vandalism, burglary and robbery. While vandalism is an on-going problem, claims are seldom filed because the required repairs can be performed in-house as part of routine maintenance at minimal expense. One transit agency has filed two claims related to the theft of office equipment; reimbursement for these claims totaled approximately $14,000. Only one incident of robbery involving bus fare passes was reported; however, no claim was filed because the contractor responsible for delivering the stolen bus passes to local outlets reimbursed the transit agency for its loss.

(3) Employee Dishonesty, Disappearance, or Destruction

Several transit agencies suspect that small amounts of theft have occurred, but only one has been able to prove any employee involvement in these losses. This evidence is a necessary prerequisite to compensation from an employee theft insurance policy. It is important to note that while the one transit agency filing a claim received a reimbursement of $95,000 from its insurance company, it still incurred a loss of $26,000.

(4) Breakdown of Equipment

Only one of the transit agencies reported claims or losses concerning damage to the physical plant (i.e., boilers and machinery). This claim resulted in a $1,000 loss for the replacement of a compressor system.

4.5.2 General Liability

Comprehensive general liability is not typically a high loss area. None of the agencies reported claims or losses concerning advertiser's liability or contractual liability. However, a limited number of premises liability claims and personal injury claims have been filed against some of the transit agencies, resulting in an average annual agency loss of $6,300, or 0.01 percent of total operating expenses.

(1) Premises Liability Claims

Only five of the transit agencies reported the receipt of claims from visitors who sustained injuries or property damage while on their premises. These types of claims often result from a person falling on a slippery floor or pavement, getting caught in elevator or office building doors, or tearing clothing while waiting on a bus stop bench. Settlement costs for these claims are usually less than $500; however large loss claims can also occur. For example, one transit agency was required to make a payment of $50,000 to a claimant who was struck by an employee while at one of the agency's facilities. Another transit agency paid $80,000 for a claim filed by an individual who was seriously injured after falling on a broken bus stop sign post.

(2) Personal Injury Liability

While the frequency of personal injury liability claims is quite low, the severity of these claims can be quite high. A total of only six claims concerning discrimination, slander, and harassment have been filed against the transit agencies over the last three years. Each of these claims and the amount of settlement is briefly described below.

- Four claims involving disputes over discrimination against an employee were settled for $10,000 to $15,000 each.

- One claim involving slander against a contractor has not yet been settled, but $55,000 has been reserved for payment.

- One claim involving sexual harassment of an employee was settled for $100,000.

4.5.3 Professional Liability

Based on available information, professional liability was determined to be the least critical of the five loss areas. Reportedly, none of the agencies examined have experienced claims or incurred losses over the last three years due to errors and omissions by the professional staff or to wrongful acts by public officials.

* * * * *

In summary, this chapter has provided a general profile of the loss areas that impact bus transit agencies. Five major loss areas were identified. It was found that bus accidents and industrial accidents are typically the greatest sources of loss due to the type of daily activities (i.e., bus operation and maintenance) being performed by the transit agencies. Information provided by the 17 bus transit agencies in the areas of property exposure, general liability and professional liability suggests that these loss areas represent a relatively small percentage of their annual claims and losses.

The lack of uniform accident and claims data constrained the level of analysis performed to develop this profile of losses. Most transit agencies collect data according to their own classifications or their own definitions. A standardized tracking system for bus transit agencies is critically needed in order to effectively monitor safety on a nationwide basis.

5.0 PROFILE OF SAFETY PROGRAMS

This chapter profiles the operational safety programs typically found at bus transit agencies. The profile is divided into three sections as follows:

- Organizational responsibility for safety
- Typical safety program characteristics
- Safety program costs.

Each of these sections is discussed below.

5.1 ORGANIZATIONAL RESPONSIBILITY FOR SAFETY

Effective program management requires that the rules of transit agency personnel relative to safety be clearly defined. Specific departments or individuals within departments should be assigned responsibility for implementing, performing and monitoring the various safety program activities. The act of assigning responsibility for safety programs is different from actually giving staff authority to implement safety recommendations and procedures. To be effective, assigned responsibility for safety must be accompanied by the authority to carry out actions and be accountable for those actions.

Safety was found to be the responsibility of various departments and supervisors within the transit agencies examined. Almost two-thirds of the agencies have independent safety departments which are directly responsible for safety program management throughout the transit agency. At those agencies where a designated full time safety manager does not exist, program responsibility lies with the managers and supervisors within each operating area. As shown in Exhibit 5-1, all of the contractor managed agencies fit into this latter category because they primarily rely on transportation and maintenance department personnel for the conduct of safety activities.

EXHIBIT 5-1
AGENCIES WITH DESIGNATED SAFETY RESPONSIBILITY OUTSIDE OF THE TRANSPORTATION AND MAINTENANCE DEPARTMENTS

All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
65%	0%	78%	100%

Monitoring of the safety program is conducted at the 17 transit agencies in three ways: evaluation of program effectiveness, reports to management and management reviews.

- Evaluation of Program Effectiveness. Forty-seven percent of the agencies reportedly evaluate safety program effectiveness through the use of inspections, monitoring of accidents and trends and evaluation of the number of miles between accidents. For example, at Denver RTD, management evaluates program effectiveness by determining what actions to take (i.e., safety goggles to protect eyes, well back programs, and mechanic safety incentive programs) when unsafe trends are spotted.

- Reports to Management. Fifteen agencies reported that they monitor the safety program through monthly reports. Examples of all reports were not available, thus their contents and level of analysis are not known in all cases. The reports may include accident summaries, identification of existing hazards and ways to correct them. At Dallas, management receives a monthly report on lost time and injuries from the loss control coordinator.

- Management Review. This form of program monitoring of safety programs is not commonly found at the transit agencies.

At all the agencies, transit managers maintain open channels of communication with supervisors and foremen through which verbal safety reports may be made daily.

5.2 TYPICAL SAFETY PROGRAM CHARACTERISTICS

The systematic performance of safety-related activities is the most effective and direct means to reduce losses due to accidents and claims. Ideally, these activities should be conducted and managed in accordance with a planned and organized safety program. Typical safety program activities include the following:

- Equipment and facility inspections
- Safety instruction
- Monitoring of employee work habits
- Accident reporting and investigation
- Accident grading
- Safety meetings
- Safety incentives
- Safety program documentation.

Each of these activities is discussed below.

5.2.1 Equipment and Facility Inspections

Transit agency equipment and facilities are usually inspected at pre-specified intervals. Aspects of these inspections are described below.

(1) Equipment Inspections

Periodic inspections are conducted at each of the transit agencies on buses and shop equipment to ensure that these items are in good and safe working condition. Bus inspections can be divided into the following two categories:

- Minor Bus Inspections. Minor inspections include operator walk-arounds to detect obvious problems with the bus such as low-inflated tires, missing or cracked mirrors and other damaged or defective parts. This inspection usually occurs daily prior to the operator's initial run. Minor bus inspections are also performed by maintenance department employees during routine night bus maintenance.
- Major Bus Inspections. Major inspections are performed as part of scheduled preventive maintenance, usually at mileage intervals ranging from 1,500 to 6,000 miles. The frequency with which these bus inspections are performed varies by the type of bus and the manufacturer's recommendations.

Both of these inspections are typically performed using a checklist of the bus' primary operating systems.

Automotive test equipment and other shop equipment inspections are conducted on a periodic basis. These inspections typically consist of both operational and visual checks of equipment. Equipment may also be subject to preventive measures such as recalibration at a regular interval or scheduled replacement before breakage occurs. Damaged equipment is replaced or repaired as required.

(2) Facility Inspections

Transit agency facilities are routinely inspected to ensure that a safe work environment is maintained. The shops are usually inspected monthly by the department manager and/or transit agency safety personnel. An annual shop inspection may also be conducted by the local fire department or the property insurance company. The state occupational safety and health administration may also make an annual inspection if the transit agency is under its jurisdiction.

All transit agencies are subject to Environmental Protection Agency regulations regarding hazardous material identification. While this area is not "inspected" per se, it is subject to periodic monitoring. All of the agencies studied were either fully compliant or were updating their information regarding safety data and hazardous materials. Some agencies made this information more accessible to employees than others by placing it in the shops near the hazardous material rather than keeping it on file in the foreman's office.

5.2.2 Safety Instruction

In addition to basic training for new operators and mechanics, specific training in safety procedures is provided by most of the transit agencies. This instruction is typically given to new employees in a classroom setting and usually covers both standard and emergency operating procedures. Operator training addresses revenue service breakdowns, fires and medical emergencies. Proper methods of seat adjustment for avoiding back strain may also be addressed. Topics covered in the mechanic training session include proper lifting techniques, use of protective equipment, hazardous material handling and building evacuation in case of fires.

Most of the transit agencies take advantage of additional training supplied by outside groups in their area of expertise. The types of supplemental training which may be offered are as follows:

- The fire department may demonstrate how to extinguish a diesel fire or contain a hazardous material spill.

- The state occupational safety and health agency may present information on specific safety and health topics.

- Property insurance companies may discuss how to prevent future losses due to accidents.

- Private vendors hired by the transit agency may instruct employees on ways to reduce job-related stress.

Other supplemental training may include videos or films loaned from the National Safety Council. One agency incorporates presentations with a luncheon to encourage attendance.

5.2.3 Monitoring of Employee Work Habits

Monitoring of the bus operators and mechanics contributes to the prevention of accidents and is performed to varying degrees by each transit agency. New operators are observed by supervisors and senior operators throughout their training and probation period. Senior operators are monitored by supervisors, other transit agency representatives or firms hired to perform independent evaluations. These checks evaluate the operators' performance and techniques to ensure that safe driving practices are being followed. Corrective action is taken as necessary.

While all maintenance foremen are responsible for ensuring the use of safe work practices in their shop areas, less than one-half of the transit agencies studied have formally documented shop safety monitoring programs. However, these programs can yield significant results. For example, one agency experienced a 75 percent reduction in eye injuries over the course of a year (i.e., from forty to ten) after implementing a rigorous program to enforce the use of protective goggles.

5.2.4 Accident Reporting and Investigation

The response to accidents and incidents is similar at each of the transit agencies visited. Emergency response to bus accidents typically follows the procedure described below. However, a standard approach for reporting and investigating workplace incidents was not evident.

(1) Accident Reporting

The majority of buses are equipped with two-way radios. These radios are used by operators to call the dispatcher when an accident or incident has occurred. The dispatcher then contacts the rescue squad, the police and the appropriate agency supervisory personnel as necessary. The radio also increases the transit agency's ability to respond to other emergencies such as a dangerous passenger, robbery or revenue service breakdown.

Every operator carries an accident report form in the bus to be completed for every accident or incident, regardless of the consequences. This report is analyzed to determine accident preventability and also serves to protect the transit agency's liability.

A second type of form that operators are required to carry is a courtesy or witness card. These cards are distributed to anyone who may have been a witness to the accident or incident. The witness cards assist transit agency personnel in making an assessment of the type of accident and the responsibility of the bus operator.

(2) Accident Investigation

In order to offer assistance to the operator and make an objective investigation of the accident or incident, a supervisor from the transit agency is dispatched to the accident scene. This investigator may be the station supervisor, the road supervisor or the safety manager. Levels of supervision may vary according to the severity of the accident (i.e., a higher level manager may go to a high damage or fatality accident).

5.2.5 Accident Grading

Accident grading is the process by which an accident is classified and graded in order to determine the type of disciplinary action to be taken if any.

(1) Accident Classification

Most transit agencies have adopted the definitions of preventable and non-preventable accidents established by the National Safety Council. Classifying accidents as preventable or non-preventable does not connote legal guilt or innocence. Career operators are considered professionals and are expected to anticipate and avoid preventable accidents or incidents.

(2) Grading Procedure

There are varying degrees of structure given to the grading process at the different transit agencies. At most agencies, grading is performed by transportation department personnel, management committee or a training supervisor based on experience and common sense. As shown in Exhibit 5-2, a transportation manager is typically the grader at the contractor managed and regional transit agencies.

The operator's record is also assessed to check for previous involvement with this type of accident or incident. After a determination of preventability has been made, the disciplinary process begins.

(3) Discipline

Disciplinary measures for preventable accidents increase in severity with accident frequency. Typically after the first preventable accident an operator may be required to take a refresher course. Second and third offenses usually result in suspension for a period of time or management review. Fourth offenses usually constitute grounds for termination at 75 percent of the agencies examined. Exhibit 5-3 shows the number of preventable

EXHIBIT 5-2
ACCIDENT GRADING RESPONSIBILITY

	Percent of Transit Agencies			
PARTICIPANTS IN ACCIDENT GRADING	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Transportation Manager	64	50	78	50
Transit Management Committee	12	25	11	0
Joint Labor/ Management Committee	12	0	11	25
Training Supervisor	12	25	0	25

EXHIBIT 5-3
NUMBER OF PREVENTABLE ACCIDENTS ALLOWED IN A 12 MONTH PERIOD BEFORE TERMINATION

MAXIMUM NUMBER OF PREVENTABLE ACCIDENTS	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Range per Category	3-6	4-5	3-4	4-6
Mean per Category	4.25	4.5	3.8	5

accidents allowed in a 12 month period before an operator is discharged. A range of 3 to 6 preventable accidents is allowed before dismissal. Regional transit agencies have the lowest average number of accidents allowed (3.8), when compared to contractor managed agencies (4.5) and county/municipal transit agencies (5). At almost every agency, the operator may appeal the accident grade and disciplinary action to an accident review board.

5.2.6 Safety Meetings

Safety meetings are held at 88 percent of the agencies studied. Separate meetings for operators and mechanics are the norm, but joint operations/maintenance department meetings are also conducted. Meetings are usually held on a weekly or monthly basis. The purpose of these meetings is primarily to increase operator and mechanic awareness of safety policies and procedures. Joint safety meetings afford the operators and mechanics the opportunity to jointly discuss issues, accidents or concerns and to combine efforts to resolve problems. These problem areas are usually assigned to the appropriate department for action and then reviewed at a later meeting.

5.2.7 Safety Incentives

Since increased safety consciousness results in fewer accidents or incidents, most transit agencies have implemented incentive programs to promote safety. Safety incentives are available for operators at all of the agencies studied. However, only about one-half of the agencies offer safety incentives for mechanics. Typical incentives include the following:

- Annual safety awards banquets for operators and mechanics who have accident-free performance records for the past 12 months
- Recognition pins or patches given to acknowledge safe performance
- Plaques which rotate among divisions based on the best monthly or annual safety record
- Lists of safe operators and mechanics published in local newspapers and other transit magazines
- Participation in the Transit Bus Roadeo sponsored by the American Public Transportation Association.

In contrast to incentives of gifts or recognition, Dallas Area Rapid Transit has initiated a program of pay for performance where the agency will reward employees with outstanding performance and safety records with cash bonuses.

5.2.8 Safety Program Documentation

Safety practices for operators and mechanics at the transit agencies visited are generally well-documented. Almost two-thirds of the agencies have safety manuals, handbooks, checklists and procedures for their employees. Many of the other agencies have written safety rules, but they are not organized into a formal safety document. In addition, most of the transit agencies use a bulletin board to disseminate information about safety meetings and classes, new policies or procedures and general information related to safety. Other bulletin boards are used to track the occurrence of recent accidents. This technique is a useful way to keep operators aware of potentially hazardous locations along bus routes and mechanics aware of unsafe conditions or practices in the workplace.

The availability of management level safety material is, however, more limited. Less than one-half of the transit agencies had comprehensive safety program plans or periodic safety performance reports. These documents were more readily available from regional transit agencies than from the agencies in the other two segments.

5.3 SAFETY PROGRAM COSTS

On average, the cost of administering transit agency safety programs is approximately 0.13 percent of total operating expenses. As shown in Exhibit 5-4, county/municipal agencies reported lower safety program costs as a percent of total expenditures than the other segments. Typical safety program cost items are described in the following paragraphs.

EXHIBIT 5-4
SAFETY PROGRAM COSTS

	Percent of Operating Expenses			
PROGRAM COST CATEGORIES	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Labor Cost	0.10	0.07	0.14	0.04
Other Cost	0.03	0.03	0.04	0.01
TOTAL	0.13	0.10	0.18	0.05

5.3.1 Labor Costs

The number of personnel involved in a safety program ranges from 1.0 to 5.8. Exhibit 5-5 presents a summary of safety personnel and labor costs for each of the agency segments.

EXHIBIT 5-5
AVERAGE NUMBER AND COST OF PERSONNEL WITH ASSIGNED SAFETY RESPONSIBILITIES

NUMBER OF PERSONNEL	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Average Personnel Equivalents	1.92	0.50	2.85	1.27
Range of Personnel Equivalents	0-5.8	.15-1.05	0-5.8	.7-1.86
Labor Costs	$62,824	$23,350	$99,903	$43,846

NOTE: At many transit agencies staff members split their time among various activities. The result is a fractional split of personnel time assigned to any one function. The sum of these fractions of time is the total personnel equivalent.

5.3.2 Program Expenses

Other safety program expenses include items such as safety awards, safety training materials and safety organization memberships. The range of expenses is summarized in Exhibit 5-6.

- Safety Awards. The cost for safety awards typically ranges from $300 to $5,600 per year. A detailed cost breakdown for awards at one agency with a much more extensive safety incentive program is presented in Exhibit 5-7.

EXHIBIT 5-6
OTHER SAFETY PROGRAM EXPENSES

	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Range of Expenses	$ 250- 43,700	$ 3,500- 22,000	$21,700- 41,042	$ 250- 43,700
Average Expenses	$23,977	$10,800	$29,208	$15.417

- Safety Training Materials. The costs for safety training supplies is estimated to be between $2,600 and $25,000. These costs include safety posters, training documentation, films, videos and pamphlets.

- Safety Organization Membership. Another related cost item is the fee for membership in various safety organizations (e.g., National Safety Council, State Safety Councils.) One agency visited indicated this cost to be $12,300 annually.

It is apparent from the above information that spending on safety expenses may be low or high depending on the agency's budget and choice of expenditures.

* * * * *

In summary, this chapter has provided a general profile of bus transit agency safety programs. Overall, 65 percent of the agencies studied were found to have independent safety departments which are directly responsible for safety program management throughout the transit agency. Activities that the safety departments are responsible for include equipment and facility inspections, safety instruction for operators and mechanics, monitoring of employee work habits, accident reporting and investigation, accident grading, safety meetings, safety incentive programs and production of formal safety program documentation. While a wide variety of safety materials are available, none of the agencies studied were found to have a formally documented, comprehensive bus safety program plan. Nevertheless, each of the transit agencies did address safety management through the conduct of a wide variety of accident prevention, emergency response and safety awareness activities.

EXHIBIT 5-7
EXAMPLE OF SAFETY AWARDS COSTS

Patches: $1.65 each x 5 per Operator = $8.25 x 822 Operators = $6,781.50

Certificates: $9.75 each x 125 Operators = $1218.75

1-9 Yr. Pins: $5.60 each x 702 Operators = $3931.20

10-14 Yr. Pins: $15.50 each x 95 Operators = $1472.50

15-19 Yr. Pins: $19.50 each x 10 Operators = $195.00

20 Yr. Pins: $32.00 each x 15 Operators = $480.00

1 Million Mile Awards: $97.00 each x 18 Operators = $1746.00

2 Million Mile Awards: $29.00 each x 3 Operators = $87.00

1 Million Mile Award Patches: $2.65 x 5 per Operator = $13.25 x 18 Operators = $238.50

Motor Fleet Services: $3.25 x 1,000 Operators = $3,250.00

NSC Membership Fee: $550.00

Award Calculation: $50.00 per hour x 75 Hours = $3,750.00

Awards Dinner: $15,000.00

Total Cost For Awards: $16,150.45 --- 825 Operators = $19.57 Average Cost

Total Cost for NSC Participation: $7,550.00 --- 1,000 Operator = $7.55 Average Cost

Total Awards Program: $23,700.45 Plus Awards Dinner = $38,700.45 Grand Total

6.0 PROFILE OF OPERATOR AND MECHANIC HIRING PROGRAMS

This chapter profiles bus transit agency loss control practices in employee hiring. The profile is organized into three sections as follows:

- Organizational responsibility for hiring
- Typical hiring practices
- Hiring program costs.

Each of these sections is described below.

6.1 ORGANIZATIONAL RESPONSIBILITY FOR HIRING

An effective loss control practice is to actively involve experienced operating personnel in the hiring process. Their knowledge of the specific bus operator and mechanic work requirements can be helpful in identifying suitable candidates for these positions as job openings occur. However, this practice is not followed by all transit agencies.

Exhibit 6-1 shows that the major responsibility for hiring at all agencies rests with the human resources department. In addition, it shows that a few of the agencies in each segment include transportation and maintenance department personnel in the hiring process. County/municipal agencies are often dependent on personnel from other local government agencies in this process (e.g., city personnel department, Civil Service Commission). The lack of direct control over the hiring process is a source of frustration to some county/municipal transit managers.

Two ways that agencies can monitor hiring program activities are through evaluation of program effectiveness and management reviews of the program. Few agencies have any form of hiring program effectiveness evaluation or periodic management reviews. Those agencies that do perform this analysis, do so by reviewing recently hired employee performance. For example, at St. Louis the effectiveness of the hiring program is analyzed by reviewing operator accidents, absenteeism, illnesses and traffic citations. Management believes that due to stricter standards enforced over the last five years, St. Louis has improved the quality of its personnel.

6.2 TYPICAL HIRING PRACTICES

Use of sound hiring practices helps to ensure the selection of qualified bus operators and mechanics. Qualified personnel should have the necessary skills, physical ability and

EXHIBIT 6-1
ORGANIZATIONAL RESPONSIBILITY FOR HIRING

	Percent of Transit Agencies			
PARTICIPANTS IN HIRING DECISIONS	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Human Resource Department	76	100	100	0
Transportation Department	41	25	56	25
Maintenance Department	53	25	78	25
County or City	24	0	0	100

temperament to function within the transit environment. The hiring of highly qualified bus operators and mechanics fosters safe and effective transportation services.

Hiring procedures for operators and mechanics typical among the agencies in this study include:

- Initial screening
- Qualifications verification
- Pre-employment testing
- Driver license testing
- Probation period monitoring.

Characteristics of current hiring procedures in the transit agencies studied are presented below. Transit hiring procedures will require slight modification to accommodate recent rules on commercial driver licensing and testing.*

6.2.1 Initial Screening

At most transit agencies, careful and detailed checks are made on an applicant's employment history, driving record and criminal record.

---

* See "Commercial Driver Testing and Licensing Standards," Final Rule of the Federal Highway Administration, published July 21, 1988.

(1) Employment History

All of the transit agencies check employment applications for a history of consistent employment. In addition, all of the agencies conduct reference checks on applicants by contacting previous employers. In most cases, this check involves requiring the applicants to sign an information release form which is then mailed to their former employers to request copies of past performance reviews. Some agencies conduct these checks over the telephone. Reference checks are important for determining the extent of each applicant's practical work experience.

(2) Driving Record

After the employment history screening is performed, a check is made on the applicant's driving record. This check is usually made with the help of the motor vehicle department and is important to ensure that the applicant has a valid license for bus operation and a history of safe driving. Most agencies require a driving record free from moving violations for a period of two to three years.

(3) Commercial Driver Licensing

Transit agencies must comply with the new commercial driver testing and licensing rule issued under the provisions of the Commercial Motor Vehicle Safety Act of 1986. The rule requires that as of April 1, 1992 all drivers of commercial vehicles, including buses that carry 16 or more passengers, be issued a single commercial driver's license (CDL) that will be recognized nationwide. The CDL must be issued by the State in which the driver lives. The rule prohibits employers from allowing an employee to operate a commercial motor vehicle (including a transit bus) if the employee's CDL has been suspended, revoked or cancelled.

Candidates who lack a CDL but who meet all other hiring criteria will have to be trained, tested and certified before a license is issued. Both a written knowledge test and a practical skills test must be passed before the CDL is awarded.

Transit agencies may be permitted by the State to waive the skills test for current bus operators so long as the operator has a satisfactory driving record, has proven skills in operating a passenger bus and is employed in a job that involves operation of a passenger bus. New operators will be required to take and pass the knowledge and skills tests in order to get a CDL.

(4) Criminal History

Approximately one-half of the agencies visited check the criminal records of the applicant. Transit agencies conduct this check to identify individuals with a history of theft or assault -- two potential risk and liability exposures. The initial check consists of a review of the criminal record information requested on the application. At some locations a state fingerprint clearance may be performed to identify applicants with a criminal record. These transit agencies also use police departments and the court systems to assist them in criminal record checks.

Three agencies utilize statewide computerized systems to aid in the process of checking applicants' criminal records. One of these three, MARTA, has a security operation on site and works with the Georgia Crime Information Network to identify applicants who have committed felonies. Persons who have been convicted of a felony within 5 years of their application are not accepted for employment. Two of the agencies visited use employment security contractors to conduct a thorough check on each applicant's work history, driving record and criminal record. Dallas contracts with a private firm to perform background investigations on each applicant at a cost of approximately $90 per person. At Dallas, an individual determination regarding a candidate's criminal record is made after review by the Director of Transportation and others; no rule regarding felonies is presently in place. State laws prevent some transit agencies from conducting criminal record checks.

6.2.2 Qualifications Verification

After the initial screening, the qualifications of applicants who meet the minimum job requirements are verified through personal interviews and physical examinations.

(1) Personal Interviews

Personal interviews are conducted by a personnel coordinator or a panel of supervisors. Questions are typically asked to reveal a bus operator applicant's attitude toward the public and ability to handle stress, and a bus mechanic applicant's basic mechanical aptitude and knowledge. Other questions that are frequently asked deal with the applicant's integrity, personality, and concern for the safety of people and property. Questions about the applicant's educational background are also asked. Most transit agencies examined require that each applicant possess a high school diploma.

(2) Physical Examinations

The most qualified applicants are sent for a physical examination. The examinations are thorough and typically include back X-rays, drug/alcohol screenings, eye examinations and hearing tests. At some transit agencies emphasis is placed on educating the physicians who perform pre-employment examinations about the specific nature of job duties performed by drivers and mechanics. As shown in Exhibit 6-2, more emphasis is placed on back X-rays and drug/alcohol screenings at county/municipal agencies than at contractor managed and regional transit agencies. Overall, drug/alcohol screening is the most widely used test in the physical examination process.

EXHIBIT 6-2
TESTS INCLUDED IN PHYSICAL EXAMINATIONS

	Percent of Transit Agencies			
ITEMS INCLUDED IN PHYSICAL EXAMINATION	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Back X-Ray	65	75	44	100
Eye Exam	71	50	78	75
Hearing Test	59	50	56	75
Drug/Alcohol Screen	88	100	78	100

6.2.3 Pre-Employment Testing

Skill and attitude testing is conducted once the operators' and mechanics'qualifications have been satisfactorily verified. Exhibit 6-3 shows the pre-employment tests utilized at the 17 transit agencies studied. The focus of most tests is on operator attitude and decision making.

The most commonly used operator tests are the University of Chicago-Validated Transit Test Battery and the Driver Test Video developed by Seattle Metro. The latter is preferred by some transit managers who feel that it better reveals the applicant's decision making and common sense skills. This test involves showing applicants a video with situational problems and asking what they would do in response. Other pre-employment tests of operators include the Wunderlich problem solving test, map reading tests and basic arithmetic tests. Transit managers

EXHIBIT 6-3
PRE-EMPLOYMENT TESTS FOR OPERATORS AND MECHANICS

	Contractor Managed Agencies				Regional Transit Agencies									County/Municipal Agencies			
	Connecticut Transit	Milwaukee County	Richmond	Memphis	Semta	Marta	Pace	Tri-met	Orange County	Denver RTD	St. Louis	Dallas	Cleveland RTA	Santa Clara County	Muni	Detroit DOT	Broward County
OPERATORS University of Chicago Validated Transit Test	●					●	●		●		●		●		●		
Seattle Driver Video Test		●		●	●			●	●					●			
Wunderlich Problem Solving Test		●								●							
General Aptitude Test			●							●		●		●			
MECHANICS Bennett Mechanical Test						●											
Flannigan Industrial Test											●						
Mechanical Procedural Test						●			●		●	●		●			

expressed the need for new and more effective driver selection test instruments.*

Only six of the transit agencies conduct formal pre-hire testing of mechanics. Two of the more prominent written tests used include the Bennett Mechanical Test and the Flannigan Industrial Battery.

6.2.4 Driver License Testing

Transit agencies will be called upon to assist in the testing of applicants for their qualifications to receive a commercial driver's license (CDL). Transit agencies will be authorized to test applicants for their skills in driving and controlling the type of vehicle to be driven on the job.

The additional requirement for skills testing prior to issuance of a CDL is not expected to unduly burden transit agencies since the subject matter is already covered in operator training; skills evaluation is an integral part of current operator training curriculums.

Mandatory written tests of basic knowledge of vehicle operating regulations, safety control systems and inspection procedures will be administered to applicants by the State Motor Vehicle Department. Specialized knowledge of procedures for braking, passenger loading, emergency situations, railroad crossings and drawbridges and other topics will be included in the knowledge testing. A list of the CDL coordinators in each state who can provide further information about anticipated testing requirements is contained in Appendix D.

6.2.5 Probation Period Monitoring

All transit agencies have a probation period requirement for new hires. This period allows the transit agency additional time to fully determine the capabilities of the operators or mechanics prior to their receiving full employment benefits. Probation begins once training is completed and lasts for a period of 90 to 120 days. Probation period monitoring usually consists of performance tracking and retraining.

---

* For example, The Niagara Frontier Transportation Authority in Buffalo, New York recently solicited bids from testing agencies to develop a pre-employment screening test to measure honesty, drug avoidance, safety consciousness, work values and ability to interact with the public.

best copy available

(1) Performance Tracking

Operator and mechanic tracking during the probation period varies. However, all agencies visited perform this activity. Individuals who are incapable of handling the demands of the job or who are unreliable are discharged during the probationary period. Also, vehicle accidents or positive drug tests can trigger termination proceedings while an employee is on probation; after probation the employee would be protected by terms of the union contract.

(2) Retraining

Each of the transit agencies provides retraining to resolve correctable problems observed while the new operator or mechanic is on probation. This is done to maintain transit operations at a safe and effective level and to protect the agency's investment in employee training.

6.3 HIRING PROGRAM COSTS

The cost of hiring programs for operators and mechanics is approximately one-tenth of one percent of total transit agency operating expenses. As shown in Exhibit 6-4, hiring program costs as a percent of operating expenses for contractor managed and regional transit agencies tend to be greater than those of county/municipal transit agencies.

EXHIBIT 6-4
HIRING PROGRAM COSTS AS A PERCENT OF OPERATING EXPENSES

	Percent of Operating Expenses			
	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Labor Cost	0.09	0.11	0.10	0.05
Other Cost	0.01	0.01	0.02	0.00
TOTAL	0.10	0.12	0.12	0.05

Typical hiring costs include labor and other expenses such as professional services, supplies and materials or travel. Average annual costs for all agencies are presented in Exhibit 6-5 and summarized below.

EXHIBIT 6-5
TYPICAL HIRING PROGRAM COSTS

	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Total Labor Cost	$74,924	$48,296	$ 88,323	$50,123
PE*	2.14	1.1	2.91	1.13
Other Expenses	$ 6,983	$ 833	$ 11,747	$ 875
TOTAL	$81,907	$49,129	$100,070	$50,998

* = Personnel equivalents.

6.3.1 Hiring Labor Costs

As shown in Exhibit 6-5, labor, including fringe benefits, is the largest part of training program costs (approximately 91 percent). The average annual labor cost for hiring operators and mechanics is $74,924. This is equivalent to approximately 2.14 people, as only a portion of several staff members' time is involved in the hiring process. Participants in the hiring process may include:

- Director of human resources/directors of transportation and maintenance
- Assistant to director of human resources/assistants to directors of transportation and maintenance
- Recruiting manager
- Secretary/clerk/support staff.

At most agencies the human resources department manages and controls the hiring process while managers from the operations and maintenance departments are involved in interviews and final hiring decisions.

6.3.2 Other Hiring Expenses

Other expenses account for approximately 9 percent of total hiring program costs. Examples of these types of expenses include:

- Printing of job applications/exams/manuals
- Preliminary physical exams (may not be included in hiring budget)
- Advertising cost.

As shown in Exhibit 6-5, regional transit agencies spend the largest amount on these expenses.

* * * * *

In summary, this chapter has provided a profile of bus transit agency hiring practices in four activity areas: initial screening of applicants, qualifications verification, pre-employment testing and probation monitoring. Overall, the hiring process is quite similar among the three study segments. The initial screening allows the transit agency to perform detailed checks on the applicant's employment history, driving record and criminal record. In addition, as of April 1, 1992, all drivers of commercial vehicles, including buses that carry 16 or more passengers, will be required to hold a single commercial driver's license. Qualifications verifications include personal interviews and physical examinations of the applicant. Pre-employment testing is typically conducted by the transit agencies studied to determine the applicant's skill and aptitude. Greater emphasis is placed on the pre-hire testing of bus operators than on bus mechanics. Probation period monitoring exists at each of the transit agencies, but it is performed on a more informal basis than the other hiring activities. Use of the sound hiring practices discussed in this chapter helps to ensure the selection of qualified bus operators and mechanics.

7.0 PROFILE OF OPERATOR AND MECHANIC TRAINING PROGRAMS

This chapter profiles bus operator and mechanic training programs. Operators and mechanics at the agencies studied are provided with formal training to ensure that they have the necessary skills to perform their jobs in a safe and effective manner. Training programs cover job orientation, basic skills training, on-the-job training, certification testing and periodic refresher courses.

The profile is organized into three sections:

- Organizational responsibility for training
- Typical training practices
- Training program costs.

Each of these sections is described below.

7.1 ORGANIZATIONAL RESPONSIBILITY FOR TRAINING

The responsibility for training at bus transit agencies falls in one or more of the following departments -- human resources, operations, maintenance, training or safety. The responsibility for training differs between operator and mechanic training:

- Operator Training Responsibility. Seventy-one percent of the agencies studied train their operators in the operations department and 29 percent instruct them in the training department.

- Mechanic Training Responsibility. Eighty-eight percent of the agencies studied train their mechanics in the maintenance department, 6 percent instruct them in the human resources department and another 6 percent of mechanic training is done by the safety department.

Three ways that agencies can monitor training program activities are through evaluation of program effectiveness, reports to management and management reviews. Ten of the 17 agencies reported that they are monitoring operator training programs. However, only five agencies were able to describe the activities used for evaluation in detail. Monthly reports discussing accident evaluations and complaints are prepared at some transit agencies. Consultants may also be used. Orange County plans to hire a consultant to evaluate the effectiveness of its training program at a one time cost of approximately $40,000.

Monitoring of training programs for mechanics is less structured than for operators. Reports to management are less frequent and typically evaluate program effectiveness only on the basis of number of accidents. However, at Denver RTD, management has implemented a maintenance review system (MRS) to aid in the evaluation of mechanic training program activities. MRS is a computerized system that keeps track of many maintenance activities. Use of this system allows for more accurate evaluation of the program.

Regardless of the organizational responsibility, the components of operator and mechanic training are similar among the agencies. The components of bus operator training and bus mechanic safety training are discussed below.

7.2 TYPICAL TRAINING PRACTICES

A structured and thorough training course for operators and mechanics is imperative to the safe operation of transit agencies. Typical elements of transit training programs include:

- New operator training
- Operator retraining
- Entry level mechanic safety training
- Safety retraining for experienced mechanics.

Exhibit 7-1 shows the average duration of each component of the operator training program. A typical transit agency has an operator training program which lasts 218 hours (approximately 27 days). County/municipal agencies were found to have the most lengthy programs (270 hours) when compared to contractor managed agencies and regional transit agencies. The size of a transit agency's service area impacts the time required for supervised bus operation. The larger the service area, the more time is needed to familiarize operators with the bus routes and schedules.

7.2.1 New Operator Training

A structured operator training course is provided at all of the transit agencies examined. The training comprises both classroom work and on-the-road drivers training. Training programs for new operators are typically between 20 and 30 days in length. The following four aspects of training were examined:

- Classroom training
- Driver training
- Operator certification testing
- Commercial drivers license testing.

These program areas are discussed below.

EXHIBIT 7-1
AVERAGE DURATION OF OPERATOR TRAINING IN HOURS

TYPES OF TRAINING	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Classroom Instruction	61.6	53.5	49.8	81.5
Driving Instruction (Bus Not In Service)	58.5	58.5	57.7	59.5
Supervised Bus Operation (Bus in Service)	97.7	74.0	90.2	129.0
Total Duration of Training Program	217.8	186.0	197.7	270.0

(1) Classroom Training

Classroom training for entry level operators includes instruction in transit agency policies, fare structure, passenger relations and assistance, basic defensive driving skills, bus care, emergency procedures and proper completion of accident forms.

Much of the procedural knowledge that must be learned by candidate operators to be eligible for the commercial driver's license (CDL) is already taught in the classroom. This includes basic knowledge of vehicle operating regulations, safety control systems, inspection procedures and procedures for responding to emergency situations.

Some bus operating theory is taught during the classroom training before the trainee receives driving experience. Eighty-two percent of the agencies in this study currently evaluate the trainee's knowledge of information communicated in the classroom using a written test.

(2) Driver Training

Training in bus driving and operation is provided to all operators and mechanics. The operator course is more extensive and includes familiarization with routes. An abbreviated course in bus operation is provided to all bus mechanics. All skills in driving and controlling a bus that are required to be tested for obtaining a commercial driver's license (CDL) are taught during the driver training segment.

The driver training portion of the operator training program provides instruction in basic driver skills and allows time for supervised bus operation:

- Basic Skills Training. Initially, operators are trained in basic procedures related to starting and stopping the bus, pulling in and out of stopping areas and other bus maneuvers. This initial training is typically conducted in a large off-road parking lot where the students can practice without danger of collision. One regional transit agency has a specially built off-road driving course for its operator trainees.

- Student Driving. After acquiring basic driving skills, the trainee is assigned to a bus with a senior operator or supervisor. Under the new commercial driver's license (CDL) rules, applicants will be able to obtain learner's permits so that they can acquire behind-the-wheel training in traffic. The bus is not operated in revenue service but is driven by the student along transit routes. This familiarizes the new student with the routes and provides actual road experience, including observation of obstacles which may be found along a route.

- Supervised Bus Operation. As the final step in driver training, the new operator is assigned a route and begins making actual runs under the supervision of an experienced operator. The student is evaluated for driving skills, knowledge of fares and customer relations. Mistakes are brought to the operator's attention through daily rating sheets filled out by the supervising operator. Throughout the driver training period, different routes are driven to familiarize the new employee with the entire agency service area.

The driver training segment of the training course requires the greatest expenditure of training time. The smaller the transit agency and service area, the less time is required to teach a new operator the routes and service area.

(3) Operator Certification Testing

Upon completion of classroom and driver training, operator skills are tested by each of the agencies visited. This evaluation usually takes the form of a written test. In a few cases there is an additional supervisory evaluation. Satisfactory marks are required on the test and on all supervisory observations before the student can be released from training and certified as a bus operator. Once certification is achieved, the new operator is assigned to the operations department.

(4) CDL Testing

In the future, transit agencies will be authorized by their respective state governments to conduct skills tests required for issuance of commercial driver's licenses. As a designated testing organization, each transit agency will be expected to assure that the applicant meets the CDL requirements.

Transit agencies may be permitted by the state to waive the skills test for current bus operators so long as the operator:

- Holds a valid driver's license
- Has a satisfactory driving record for the two years preceding the CDL application
- Is employed in a job that involves operation of a passenger bus
- Has two years of recent driving experience in the vehicle or has passed a specialized skills test in the same type of bus to be driven commercially.

Written knowledge tests required for issuance of a CDL are expected to be conducted by the State Motor Vehicle Department.

7.2.2 Operator Retraining

Retraining and/or refresher courses are provided to entry level operators and experienced operators. The objectives of retraining are to provide an additional preventive measure against accidents, to refresh the operator's knowledge of defensive driving skills (particularly after an accident) and to familiarize the operators with new equipment. Currently, retraining of experienced operators is done more frequently as a follow up to an accident and less often as a planned periodic activity. This is shown in Exhibit 7-2. Key objectives of the training include:

- Refresher Training. Transit agencies utilize refresher training of operators as a preventive measure. A refresher course sharpens defensive driving skills and makes the operator more aware of possible problem areas.

- Retraining Following An Accident. All transit agencies studied require retraining for an operator following a preventable accident. Most often this retraining is part of the disciplinary action associated with the accident. The operator is not paid for the training time which ranges from four hours to two days.

- Training On New Equipment. Training on new equipment is provided by all the transit agencies to operators on an as needed basis.

EXHIBIT 7-2
FREQUENCY OF REFRESHER TRAINING FOR OPERATORS

INTERVAL	Number Of Agencies Conducting Refresher Training
Refresher at set intervals	7
Refresher after an accident/problem	16
After equipment upgrade	11
After a leave of absence	2
After change of route assignment	2

7.2.3 Entry Level Mechanic Safety Training

A structured entry level mechanic training program is provided at 76 percent of the agencies studied. The other 24 percent have no documented training materials or outlines, although entry level mechanic training is reportedly provided.

Mechanic safety training combines classroom and shop experience. Theory is taught in the classroom; practical application of theory is taught on the shop floor. The following discussion of mechanic training addresses classroom training, in-shop practical training, shop safety training and bus operation.

(1) Classroom Training

Classroom training for entry level employees in the maintenance department generally consists of maintenance policies, procedures and theoretical approaches to minor mechanical problems. In transit agencies with no structured classes, maintenance skills or job instructions are passed directly to the employee by the maintenance foreman or another employee through one-to-one personal orientation.

(2) In-Shop Practical Training

Instruction in mechanical skills is provided through in-shop practical training for new mechanics. The skills are taught to the new mechanic by senior level mechanics.

(3) Shop Safety Training

In the area of shop safety, three important training categories include fire prevention, first aid/CPR and hazardous materials handling. Few agencies provide formal instruction in more than one of these areas. The agencies usually rely upon general communication among all employees and supervisors. As shown in Exhibit 7-3, the area of shop safety that is most emphasized is hazardous materials handling. According to EPA guidelines, any industry which has hazardous materials on the premises must have safety and diagnostic information readily available. The location of this information and its contents must be known by each employee. Also, each employee should at least be familiar with rudimentary emergency procedures for specific hazardous materials used on a daily basis.

EXHIBIT 7-3
AVAILABILITY OF STRUCTURED SHOP SAFETY INSTRUCTION

	Percent of Transit Agencies			
SHOP SAFETY COURSES	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Fire Prevention	29	75	11	25
First Aid/CPR	24	25	33	0
Hazardous Materials Handling	53	25	67	50

(4) Bus Operation

As discussed above, an abbreviated course in bus operation is provided to bus mechanics. Most, but not all, mechanical staff may be required to obtain CDL's depending on their job descriptions and the state requirements. The Federal Highway Administration has made the distinction that any person required to drive a commercial vehicle on public roads must obtain a CDL. Thus, depending upon their job requirements, bus fuelers and cleaners may not have to be issued a CDL.

7.2.4 Safety Retraining for Experienced Mechanics

Shop safety refresher courses for experienced mechanics emphasize hazardous materials handling and fire prevention/fighting. There is little structured review of other safety topics except the "tailgate topics" which are reportedly presented weekly or bi-weekly by shop supervisors. All agencies studied offer manufacturers seminars on new test equipment and bus equipment. Courses to upgrade skills for experienced mechanics are more frequently found at the regional and county/municipal transit agencies than at the contractor managed agencies. These courses are found at more than 75 percent of regional transit and county/municipal agencies as compared to only 25 percent of the contractor managed agencies studied.

7.3 TRAINING PROGRAM COSTS

As shown in Exhibit 7-4, the cost of operator and mechanic training is approximately 0.39 percent of transit operating expenses for all agencies studied. County/municipal agencies tend to have greater training program costs (0.44 percent of operating expenses) than contractor managed (0.43 percent) and regional transit agencies (0.36 percent).

Typical training expense items and their costs for operators and mechanics are described in Exhibit 7-5. Training costs for operators and mechanics include labor and other program costs such as professional services, supplies and materials.

7.3.1 Operator Training Program Costs

Labor cost is the largest part of operator training costs for operators (approximately 98 percent). Typical staff for an operator training program may include:

- Director of transportation training
- Supervisor of training
- Two to five trainers
- Secretary/clerk/support staff.

EXHIBIT 7-4
TRAINING COSTS AS A PERCENT OF OPERATING EXPENSES

TRAINING CATEGORIES	All Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Operator Training[1]	0.35	0.40	0.31	0.42
Mechanic Training[2]	0.04	0.03	0.05	0.02
TOTAL	0.39	0.43	0.36	0.44

[1] All training
[2] Safety training only

EXHIBIT 7-5
OPERATOR AND MECHANIC TRAINING PROGRAM EXPENDITURES

EMPLOYEE TYPE	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Operators				
Labor cost	$286,572	$130,940	$288,643	$438,583
PE*	6.30	2.76	6.6	9.34
Other Expense	$ 4,683	$ 7,925	$ 5,079	$ 750
Mechanics				
Labor Cost	$ 25,912	$ 8,975	$ 45,268	$ 9,856
PE*	1.25	0.20	2.45	0.42
Other Expense	$ 1,487	$ 1,875	$ 6,123	$ 10,125
Total Cost				
Labor Cost	$312,484	$139,915	$333,911	$448,439
PE*	7.54	2.96	9.05	9.76
Other Expense	$ 6,170	$ 9,800	$ 11,202	$ 10,875

*PE = Personnel equivalents.
All figures are the mean 1987 costs for the indicated category.

Expenses other than labor account for two percent of total program costs. Examples of these expenses include:

- Printing of training manuals and other materials
- Videos and films to aid in operator training
- Staff development of training instructors.

At a typical transit agency, labor costs are $286,572 with an equivalent of 6.3 people involved in the training process.

7.3.2 Mechanic Safety Training Costs

Labor costs constitute 95 percent of total mechanic safety training program costs. For a typical transit agency, labor cost for mechanic safety training is $25,912 with 1.25 people involved in the process. The staff for a typical mechanic training program may include:

- Director of maintenance
- Supervisor of training
- Maintenance training instructors
- Trainers
- Secretary/clerk/support staff.

Other mechanic safety training program costs may include:

- Printing of mechanic manuals and technical material to aid mechanics

- Safety materials such as protective eyewear and gloves

- Films and videos

- Staff development.

Total costs of training programs for both operators and mechanics averaged $312,484 for the three-year period assessed in this study.

* * * * *

In summary, this chapter has provided a profile of bus transit agency loss control programs in relation to operator training and mechanic training. Organizational responsibility for operator training is seen most frequently in the operations department (71 percent) and organizational responsibility for mechanic training is centered in the maintenance department at 88 percent of the agencies studied. Regardless of the organizational responsibility, the components of the training programs were found to be similar across all of the transit agencies examined. Both training programs include teaching of theory and practical application of theory. New operator training includes classroom training, driver training and operator certification testing. Operator re-training was most frequently found to occur in a post accident/problem situation. Mechanic safety training combines classroom and shop experience as well as shop safety training in the areas of fire prevention, first aid/CPR and hazardous materials handling. However, most bus mechanic training courses lack comprehensive shop safety training. Operators and mechanics both can benefit from receiving formal training and instruction. This will ensure that they can perform their jobs in a safe and effective manner.

8.0 PROFILE OF DRUG AND ALCOHOL PROGRAMS

Employee impairment, whether from drugs or alcohol, could be costly to the transit industry. The most obvious losses are absenteeism and on-the-job accidents; more subtle is the loss of productivity from impaired employees. Seventy-six percent of the agencies studied currently have policies regarding the possession and use of drugs and alcohol in the work environment. UMTA's new rule, Control of Drug Use in Mass Transportation Operations (49 CFR Part 653), requires all agencies to implement an anti-drug program as a condition of their receipt of Federal funds.

This chapter summarizes the current anti-drug programs of the 17 transit agencies included in this study. The chapter is organized into seven topic areas:

- Organizational responsibility for anti-drug programs
- Description of UMTA's drug testing rule
- Description of FHWA alcohol testing rules that impact bus operators
- Current transit agency practices
- A comparison of current practices with the UMTA rule
- Recommended actions for compliance
- Program costs.

Each of these areas is discussed below.

8.1 ORGANIZATIONAL RESPONSIBILITY FOR ANTI-DRUG PROGRAMS

The responsibility for drug and alcohol programs is typically assigned to either the human resources or the operations departments. Seventy percent of the agencies studied have assigned the anti-drug responsibility to the human resources department; 30 percent delegate this responsibility to the operations department.

8.2 DESCRIPTION OF UMTA'S DRUG TESTING RULE

UMTA's final drug testing rule became effective December 21, 1988. It contains the following provisions:

(1) Coverage Under the Rule

Transit systems which receive Federal financial assistance under sections 3,9 and 18 of the Urban Mass Transportation Act of 1964, as amended, are required to have drug testing programs covering "sensitive safety employees": transit vehicle operators, vehicle controllers, vehicle maintenance workers and supervisors of such employees. Part-time and temporary employees are included. All recipients of section 16(b)(2) funds are excluded from coverage at this time.

(2) When Employees Test Positive

Employees who test positive under this rule or who refuse to take a drug test must be removed from sensitive safety positions or duties. They could be reinstated after a return to duty drug test with the approval of a medical officer and would be subject to periodic follow-up testing. The rule, however, does not require a rehabilitation program for those who test positive.

(3) Compliance Requirements

Transit agencies must submit the first certification of compliance to UMTA no later than 12 months after the effective date of this rule and annually thereafter. Agencies serving urbanized areas under 200,000 and section 18 properties are classified as "small operators." Small operators have 24 months to certify compliance with annual submissions thereafter.

(4) Testing Requirements

Without specific authorization from UMTA, transit agencies may only test samples for five major drugs: marijuana, cocaine, opiates, PCP and amphetamines. Alcohol is not addressed in this rule. Five kinds of testing are required under the rule: pre-employment, reasonable cause, return to duty, post accident and random. Two supervisors must make the determination to test for reasonable cause. Small agencies need only one supervisor. Random testing must be conducted at a 50 percent annual rate.

(5) Testing Procedures

Procedures must follow DOT standards for specimen collection and laboratory analysis and qualifications stated in 49 CFR Part 40, Procedures for Transportation Workplace Drug Testing Programs, dated November 21, 1988. 49 CFR Part

40 limits both the screen test and the confirmation test each to a specific technology, immunoassay and gas chromatography/mass spectrometry (GC/MS), respectively.

(6) Recordkeeping Requirements

Grant recipients must submit a semiannual report to UMTA containing information and material broken down by mode as required by the rule. Recipients are also required to retain the reports of employees or job applicants not passing any category of drug test for at least five years. Records for those passing tests must be kept for one year.

(7) Private Employees Under Contract

The rule covers employees of private companies providing mass transportation services to recipients if the employees perform safety sensitive functions. It is the recipients' responsibility to ensure and certify to UMTA that any private operator with employees in sensitive safety categories complies with the drug testing rule.

(8) Other Requirements

Each program must include a policy statement on drug use in the workplace and an employee education and training program.

8.3 DESCRIPTION OF FEDERAL HIGHWAY ADMINISTRATION (FHWA) ALCOHOL TESTING RULES THAT IMPACT BUS OPERATORS

New commercial driver testing and licensing (CDL) rules issued under the Commercial Motor Vehicle Safety Act of 1986 contain provisions concerning implied consent for alcohol testing.* The rule states that, by the act of driving a commercial motor vehicle (including a transit bus that carries 16 or more passengers) the CDL holder has given implied consent to alcohol testing.

If there is probable cause to believe the driver was operating a bus with alcohol in his/her system, a test can be administered. Any detected presence of alcohol will result in a 24 hour suspension. Also, according to the FHWA rule, an operator can be disqualified from operating a commercial motor vehicle (CMV) for one year if convicted of a first violation of:

- Driving a commercial motor vehicle under the influence of alcohol or a controlled substance

---

* See "Blood Alcohol Concentration Level for Commercial Motor Vehicle Drivers, Final Rule" by the Federal Highway Administration published October 4, 1988.

- Driving a commercial motor vehicle with a blood, breath or urine alcohol concentration of .04 percent or more

- Refusing to submit to a blood alcohol test after driving a commercial motor vehicle.

Individual state governments are responsible for establishing administrative procedures to disqualify CMV operators who violate any element of these rules.

8.4 CURRENT TRANSIT AGENCY PRACTICES

Current anti-drug programs typically include a policy statement, test criteria, test methods, disciplinary procedures and an employee assistance program (EAP). Each is described below.

8.4.1 Policy Statements

Policy statements are used to inform employees of the transit agency's position on drug related issues. The policy usually states what substances are covered in the drug testing program, how much of a substance will be tolerated, what disciplinary action will be taken and information regarding the employee assistance program. Exhibit 8-1 shows the ranges of these various components at the transit agencies visited.

Some specifics of current policies at the agencies studied are:

- Substances Covered. All systems with policies prohibit the use of alcohol, marijuana and other drugs such as cocaine, PCP, heroin, etc., as defined in the Controlled Substances Act. Prescription drugs are not explicitly spelled out by name but any employee taking prescription drugs which can affect performance must notify his/her supervisor and have a current, valid prescription available for verification.

- Permitted Limits. The limits on alcohol are any detectable amount at 36 percent of the agencies and no more than 0.10 percent at 50 percent of the agencies. (The new Federal CDL rule establishes 0.04 percent as the blood alcohol concentration level at or above which a commercial motor vehicle driver would be disqualified.) The limits on marijuana are inconsistent throughout the agencies. Twenty-nine percent do not permit any amount. Eighteen percent

EXHIBIT 8-1
RANGES OF ANTI-DRUG POLICIES AT TRANSIT AGENCIES

POLICY ITEM	Range of Policies Found at 17 Transit Agencies
Substances Covered	From a detailed listing of specific substances to broad definitions such as "any intoxicating substance"
Permitted Limits	From "any detected amount" to the state's legal limit
Disciplinary Actions	From "immediate termination" to multiple EAP options
Employee Assistance Program	From "must attend as result of positive test results" to "voluntary attendance."

accept up to 50 ng/ml; 12 percent accept 100 ng/ml*. The other agencies range from two ng/ml to 75 ng/ml. The limits on other drugs range from any detected amount at the majority of systems up to 1000 ng/ml at one agency.

- Discipline. Forty-one percent of the agencies state that discharge is the discipline for positive drug testing, but several then add clauses about post-discharge EAPs and petitioning for job reinstatement. Twenty-nine percent send employees directly to EAPs for discipline after positive drug tests.

- EAPs. Every agency permits EAP participation on a self referral basis; only one subjects those voluntary referrals to testing. EAPs are also used for disciplinary actions.

8.4.2 Testing Requirements

At the transit agencies studied, testing is required in five circumstances. Exhibit 8-2 lists the frequency of specific test requirements. As shown in the exhibit, drug testing during a pre-employment physical and when there is cause to suspect intoxication is common today.

---

* A nanogram is one billionth of a gram.

EXHIBIT 8-2
DRUG TEST REQUIREMENTS AMONG 17 TRANSIT AGENCIES

	Percent of Transit Agencies
Pre-employment	88
Reasonable cause	88
Post accident	76
Periodic	47
Return to duty	18

Reasonable cause has been defined as specific, articulable observations by a supervisory employee concerning work performance, appearance, behavior or speech of an employee. Areas that are observed include:

- Physical signs
- Mood
- Absenteeism
- Relationship to others on job
- Work patterns
- Specific actions such as argumentative behavior.

Post accident testing is practiced at 76 percent of the agencies assessed, usually as the result of a high dollar loss, severe injury, collision or fatality. Some agencies test after all accidents. Forty-seven percent of the agencies test at pre-established times such as at the annual physical or other specific intervals of which the employees are fully cognizant. None of the agencies have pure random testing programs. The only random testing performed is for those employees returning to work after treatment in an employee assistance program.

8.4.3 Testing Methods

The tests presently used by transit agencies for anti-drug programs are fairly standardized. The most frequently used tests are the Enzyme Multiple Immunoassay Technique (EMIT), the Gas Chromatography/ Mass Spectrometry (GC/MS) and the Thin Layer Chromatography (TLC). These tests are described below.

(1) Enzyme Multiple Immunoassay Technique (EMIT)

The EMIT test is the most common test which utilizes the enzyme immunoassay method. Shown to be 92 to 95 percent accurate, the EMIT test is widely used to check for past use of a variety of controlled substances including cocaine, PCP, heroin, marijuana, barbiturates and opiates. Like all immunoassays, the EMIT can quickly screen a large number of samples at a low cost. In this test, the extent of a substance's presence is determined by the amount of ultraviolet light absorbed in the chemical reaction between the urine sample and the testing enzyme. It is most often used as a drug screening test.

(2) Gas Chromatography/Mass Spectrometry (GC/MS)

In addition to a special chromatograph, a mass spectrometer is used in this method to determine the molecular weight of the substance being tested and compare its unique fragmentation pattern to an accepted standard. Experts rely on GC/MS as the only acceptable means of confirmation of a drug's presence in the body, as it proves to be approximately 99 percent accurate. Extensive use of this test is limited by its high cost and so it is often used as a confirmation test after an initial positive result.

(3) Thin Layer Chromatography (TLC)

TLC requires the independent confirmation by another method which will indicate the presence of a particular drug. As a form of chromatography, TLC separates substances into single molecular components whose migration patterns through a solvent are compared to those of a known substance. Thus, TLC is capable of separating and identifying chemical components of a drug but not the specific drug itself. It is used as a screening test, but not as frequently as EMIT.

Exhibit 8-3 summarizes the various tests which can be used and the type of biological samples that can be tested. The use of testing samples varies. Typically, the initial biological sample is divided into several parts for multiple tests. Any negative test result stops the testing process. A positive test result leads to a more expensive and more accurate test on another sample part to confirm the result. Also, one of the sample parts is reserved in the event that an employee requests a test by an independent laboratory of the employee's choice.

8.4.4 Test Cut-Off Points and Disciplinary Actions

Alcohol testing in most states presently uses 0.10 percent of alcohol content in the blood as the cut-off point to presume impairment. In its recent ruling however, the Federal Highway Administration established 0.04 percent as the level at or above which a person, when operating a commercial motor vehicle, shall be deemed to be driving under the influence of alcohol.

In drug testing, setting a limit promotes a certain amount of consistency. However, the cut-off point may vary with each testing method and may also be subject to change when cross-

EXHIBIT 8-3
SUMMARY OF TESTS USED TO DETECT THE PRESENCE OF PROHIBITED SUBSTANCES IN THE BODY

SUBSTANCE[1]	TEST METHOD[2]	RELATIVE COST OF TEST[3]	BIOLOGICAL SAMPLE TESTED[4]	REFERENCE[5]	
				SOURCE	PAGE
Alcohol	Breathalyzer[6]	Very Low	Breath	Zeese	2-26
	GC/MS[6]	High	Blood	Zeese	2-3
	EIA (EMIT)	Low	Urine	APTA	144
Marijuana/ Cannabinoids (containing THC)	EIA (EMIT)[6]	Low	Urine	Zeese, APTA	2-7, 99
	TLC[6]	Very Low	Urine	APTA	100, 101
	GC/MS[6]	High	Urine	APTA	178
	RIA (Abuscreen)	Low	Blood, urine, serum	Zeese	2-10
	FPIA (TDx)	Low	Urine	Zeese	2-10
	EIA (EZ-Screen)	Low	Urine	Zeese	2-12
Habit-forming drugs: cocaine, heroin, PCP, LSD, depressants, stimulants	EIA (EMIT)[6]	Low	Urine	Zeese, APTA	2-7, 99
	TLC[6]	Very Low	Urine	APTA	100, 101
	GC/MS[6]	High	Urine	Zeese	2-22
	FPIA (TDx)	Low	Urine	Zeese	2-10, 2-11
	RIA (Abuscreen)	Low	Blood	Zeese	2-28
	RIA (Abuscreen)	Moderate	Hair	Zeese	2-28

[1] Chemical substance names:
THC - Tetrahydrocannabinol
PCP - Phencyclidine
LSD - Lysergic acid diethylamide

[2] Test methods (Common test names):
EIA - Enzyme Immunoassay Test (EMIT: Enzyme Multiplied Immunoassay Technique. EZ-Screen)
RIA - Radio Immunoassay Test (Abuscreen)
FPIA - Fluoroescein Polarization Immunoassay Test (TDx Toxicology/Abused Drug Assays)
GLC - Gas-Liquid Chromatography
GC/MS- Gas Chromatography/Mass Spectrometry

[3] Estimated cost ranges:

Very low:	< $4
Low:	$ 4 - $12
Moderate:	$12 - $50
High:	> $50

[4] According to APTA (p. 2-5), "most of the major testing methods can be used for a variety of biological specimens with only moderate changes, i.e., urine, blood, and saliva."

[5] Zeese, Kevin B., Drug Testing Legal Manual (Clark Boardman Company, Ltd., 1988).
American Public Transit Association, From Here to There...Safe and Sober: A Manual on Drug and Alcohol Abuse in Transit, 1987.

[6] Tests most commonly applied by transit system testing programs. Other lesser known methods not shown in the table include:

- High Performance TLC (HPTLC). This is a modification of TLC with enhanced analytical capability.
- High Pressure Liquid Chromatography (HPLC). This is an outgrowth of GLC used as a confirmation test.

reaction or other chemical reaction problems surface. As a consequence, there is a risk that standard drug testing methods may produce questionable results.

A broad range of discipline is given at the transit agencies as a result of positive drug testing. The most severe discipline for a positive drug test is immediate termination of employment with no recourse. This is the procedure at 29 percent of the agencies in this assessment. Less severe discipline may be mandatory enrollment in an EAP. This is the policy at 41 percent of the agencies. The other agencies studied assign discipline ranging between these extremes, such as:

- EAP enrollment with the right to petition for job reinstatement after completion

- Temporary suspension.

Exhibit 8-4 presents five examples of bus transit policies regarding cut-off points and discipline. Disciplinary actions are often taken in incremental steps, depending on the amount of substance detected and the frequency of the detection (i.e., third offence in five years). Disciplinary actions increase in severity with higher substance content or repeated offenses.

8.4.5 Testing Process

In order to maintain control and accountability for controlled substances, testing is administered by transit agencies according to the "chain of custody" procedure. This method for tracking specified substances from initial collection to final disposition entails the following:

- Transportation of the Employee. Transporting the employee suspected of substance abuse to the testing center is done by a transit agency supervisor.

- Investigation of the Sample. Detailed procedures are followed at the lab or clinic which guarantee that the sample received is that of the actual suspected employee. This process ensures accountability at each stage in handling, testing, storing specimens and reporting test results.

- Transportation from the Test Facility. The supervisor transports the employee back to the transit property after the testing has been completed. Union officials are contacted as requested by the employee.

At the transit agencies visited, all testing is done away from the transit property at a private lab, clinic or other facility with which the agency has a contract.

EXHIBIT 8-4
EXAMPLES OF CONTROLLED SUBSTANCE CUT-OFF POINTS AND INDICATED DISCIPLINES

	TRANSIT SYSTEM A		TRANSIT SYSTEM B		TRANSIT SYSTEM C		TRANSIT SYSTEM D	
	Amount Specified in Policy	Discipline Specified	Amount Specified in Policy	Discipline Specified	Amount Specified in Policy	Discipline Specified	Amount Specified in Policy	Discipline Specified
Alcohol	While driving: < .10 percent blood alcohol content While on company property	Counseling/ Rehabilitation	< .04 percent blood alcohol content	10 day suspension EAP briefing	.01 - .04 percent blood alcohol content	Ranges from a three week suspension to discharge		
	> .10 percent blood alcohol content	Discharge	.04 percent blood alcohol content	Immediate discharge with EAP option to retain employment	.05 - .09 percent blood alcohol content	Ranges from a four week suspension to discharge		
					.10 percent blood alcohol content	Immediate discharge		
THC[1]/Marijuana	Any detectable level of a controlled substance in the urine is prohibited	Counseling/ Rehabilitation Suspension	< 5 nanograms[2] THC per ml blood; < 10 ng/ml THC plasma	10 day suspension EAP briefing	Any positive saliva test within 6 hours of scheduled work	Discharge	50 nanograms as measured by the EMIT[3] urine test Any amount as measured by the Gas Chromatography test	No written policy
			5 nanograms per ml blood; 10 nanograms per ml plasma	Immediate discharge with EAP option to retain employment	Positive blood or urine test	30 day suspension to discharge		
Hard Drugs (i.e., Cocaine, Heroin)	Any measurable amount	Ranges from suspension to discharge	Any measurable amount	10 day suspension EAP briefing	Any measurable amount	Immediate discharge	Any measurable amount	
Prescription Drugs	Only an issue if the prescription impairs the employee's ability to perform. Employee must be able to produce a current, valid copy of prescription within 48 hours if element is identified in a drug test. Prescription must be in employees name.							

---

1 THC is the chemical abbreviation for tetrahydrocannabinol.

2 A nanogram is one billionth of a gram.

3 EMIT is the abbreviation for the Enzyme Multiplied Immunoassay Technique.

8.4.6 Employee Assistance Programs

The purpose of employee assistance programs (EAPs) is to ensure that any employee having a work-hindering personal problem receives careful consideration and an offer of confidential professional assistance. Eighty percent of the agencies studied provide an EAP.

Counseling for employees and usually the employee's family is offered not only for a substance abuse problem, but may also include:

- Marriage or child related difficulties
- Financial difficulties
- Gambling problems
- Emotional difficulties
- Eating or weight disorders.

Employees may enter an EAP voluntarily (self referral) or be required to attend by the transit agency. In some agencies where EAP participation is part of a discipline procedure, failure to comply with the company referral is cause for dismissal.

8.5 COMPARISON OF CURRENT PRACTICES WITH THE UMTA RULE

The purpose of UMTA's drug testing rule is to require any recipient of Federal transit funding to certify that it has established a comprehensive anti-drug program. The overall goal is to ensure a drug-free transit workforce and to eliminate drug use and abuse in the public transit industry.

The mandate of the UMTA rule is based on the assumption that use of any controlled substance has a detrimental effect on safety. The effects on human performance are not limited to the perceived high or other immediate mind altering sensations experienced by the user, but may be complex and long lived. The UMTA anti-drug rule requires all agencies to implement anti-drug programs consisting of testing together with employee education and training. An explanation of these requirements and a comparison with existing programs at the 17 agencies is presented below.

8.5.1 Testing

The final rule requires transit agencies to test employees in sensitive safety positions for drugs prior to employment, after an accident, when there is reasonable cause, randomly and before returning to duty to perform sensitive safety functions after a positive drug test. Exhibit 8-5 summarizes the percentage of compliance with this rule within the study segments. Four agencies have no formal anti-drug policies in

EXHIBIT 8-5
CURRENT ANTI-DRUG TESTING REQUIREMENTS

	Percent of Transit Agencies			
TEST REQUIREMENTS	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Pre-Employment	88	100	78	100
Post Accident	76	75	78	75
Reasonable Cause	88	75	89	100
Random	0	0	0	0
Return to duty	18	25	11	25

place. However, only one of these agencies requires no drug testing of any kind. Each of the others, even with no documented anti-drug policy, does pre-employment, post accident or reasonable cause testing. Detailed comparisons are found below.

- Pre-Employment Testing. Under the UMTA rule, an applicant must pass a pre-employment test before being hired for a sensitive safety position. The rule does not require each applicant to be tested. The requirement is only for the person selected for the position. All but two agencies in the study currently require pre-employment drug testing. One agency even permits a second test if the first is positive.

- Post Accident Testing. The final rule requires post accident drug testing if there is a death or injury requiring the victim to be taken to a medical facility; if there is more than $5,000 in property damage; or if the accident must be reported to the Federal Highway Administration, the Federal Railroad Administration or the U.S. Coast Guard. Testing is not necessary if it is determined that the performance of a person in sensitive safety employment was not a contributing factor in the accident. UMTA requires testing as soon as possible but not later than 32 hours after an accident. In the current study, 76 percent of the bus transit agencies currently provide post accident testing. In the agencies studied, some require drug testing after all accidents. Others waive testing in accidents which are obviously not the fault of the operator.

- Reasonable Cause Testing. Reasonable cause testing is based on the belief that an individual using controlled substances while on duty can be recognized and confronted. The final rule does not delineate what constitutes reasonable cause beyond requiring that the circumstances triggering the decision to test must be articulated and substantiated by "specific behavioral performance or contemporaneous physical indicators of probable drug use." Two supervisors must make the determination to test based on reasonable cause. Small operators need only one supervisor to make the determination. Supervisors must have received additional training regarding the circumstances and evidence necessary to make the determination. Eighty-eight percent of the agencies studied currently require reasonable cause testing.

- Random Testing. The constitutionality of random testing is still unsettled. UMTA is convinced, however, that this anti-drug rule will withstand constitutional challenge and that unannounced testing based on random selection is a fundamental component of any effective program. In the final rule, UMTA has adopted a 50 percent random testing rate and provides an implementation procedure allowing employers to phase in random drug testing during the first 12 months in which tests are conducted. UMTA encourages states and their subrecipients, small and rural operators, to form consortia to meet the requirements of this rule. UMTA may grant temporary waivers to employers in states or localities which prohibit or limit random testing of employees. None of the transit agencies in this study currently require this form of random testing.

- Testing Upon Return to Duty. Random tests are performed at the agencies studied only as a result of an employee's previously positive test or after enrollment in an EAP. The random tests are usually given for a period of one year after treatment is concluded and may consist of an established number of tests (i.e., two in a one-year period with the first occurring no more than six months after the initial completion of treatment). The UMTA rule requires that in the event an employer allows an employee who failed a post-accident, reasonable cause or random drug test to come back to work, he may give unannounced drug tests to the individual for up to 60 months after the return. In addition, an employee who fails a test or refuses to take one would have to obtain a determination from a medical review officer (MRO) that he or she could return to duty.

As discussed above, 88 percent of agencies currently have programs for pre-employment and reasonable cause testing. To comply with the UMTA rule, all agencies will need these programs together with standard procedures for post-accident testing, return to duty and random testing. Establishing random testing procedures is expected to create major problems for transit agencies.

8.5.2 Employee Assistance Programs

UMTA's final rule does not require recipients of grants to offer opportunities for rehabilitation to substance abuse offenders or to provide job security to employees who fail drug tests, use drugs on the job or who voluntarily come forward and request rehabilitation. UMTA, however, encourages recipients to consider rehabilitation opportunities and to provide job security to employees enrolled in a rehabilitation program. Issues such as adequate amount of time for rehabilitation, an appropriate amount of time to receive a recommendation to return to duty in a sensitive safety position and job security matters are left up to employers. As shown in Exhibit 8-6, 94 percent of all transit agencies in this study currently have employee assistance programs.

EXHIBIT 8-6
AVAILABILITY OF EMPLOYEE ASSISTANCE PROGRAMS

	Percent of Transit Agencies			
	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
EAP Available	94%	100%	89%	100%

8.5.3 Employee Education and Training Programs

The new rule requires an employee education and training program for all employees who perform sensitive safety functions and provides a list of the basic elements the program should contain. No minimum time periods are specified except that supervisors must receive at least 60 minutes of training before they are eligible to make a determination that an employee is subject to reasonable cause testing. UMTA has left the extent and type of anti-drug education and training up to individual employers, but encourages them to provide employees with frequent and substantial information, educational materials and training as part of an internal EAP or by contracting with community agencies, private organizations or other recipients, possibly in consortia arrangements. Many of the transit agencies studied had some form of education and training program in place. Training supervisors to detect possible drug use is a common practice in transit agencies today.

8.5.4 Reporting and Recordkeeping

Under the final rule, recipients must submit semiannual reports to the UMTA Administrator. The reports cover 13 data items relating to drug tests for each mode of transportation provided by the recipient. UMTA anticipates that this semi-annual requirement may be modified or possibly eliminated within the next three to four years if it is incorporated into the annual Section 15 reporting requirement. In response to numerous comments, UMTA has withdrawn the proposed requirement that if an applicant is not hired, no record of the test results will be maintained. In the final rule, the recipients must retain all records related to the collection process and reports of those not passing a drug test for five years. The reports of individuals passing drug tests must be kept at least one year. Medical review officers must also keep these records. Tests results can only be released with the written consent of the individual.

8.6 RECOMMENDED ACTIONS FOR COMPLIANCE

Most of the transit agencies observed in this study would be able to achieve full compliance within the time limits permitted by the UMTA rule. Agencies without current programs could encounter some delays in meeting this deadline. However, specifications from UMTA of what requirements need to be met and possible assistance from other transit agencies which already have anti-drug programs in place could expedite implementation of these programs.

Recommendations to transit agencies that must comply with UMTA's requirements include the following:

- Examine details of current anti-drug plans which are most closely in compliance with the rule. These could serve as a starting point and be revised to meet the requirements of the UMTA rule.

- Explore the feasibility of multiple transit agencies in one state working together on a program. This could reduce time spent per agency and increase statewide compatibility.
- Start at the inception of the program to track necessary report data by mode; establish forms and methods to make the data easily accessible and retrievable.
- All agencies need to institute random testing to be in compliance with the UMTA rule. UMTA's suggestions for starting out at a lower testing rate and working up to 50 percent as experience is gained will facilitate compliance.
- Research state and local laws for conflicts with the UMTA requirements. If necessary, recipients may seek waivers from any part of the Federal law preempted by State and local laws.
- Meet education and training program requirements through the expansion of present EAP activities.

In addition to compliance with the UMTA drug testing rule, transit agencies are now subject to the Federal Highway Administration rule regarding alcohol testing and blood alcohol concentration levels for commercial motor vehicle drivers. Actions should be taken to assure compliance with aspects of the rule that impact bus operators. These include implied consent for alcohol testing, suspension when there is probable cause to believe the driver was under the influence of alcohol and disqualification for conviction of a driving with a blood alcohol content of 0.04 percent or more. A list of contacts for more information is provided in Appendix D.

8.7 PROGRAM COSTS

The costs of current anti-drug programs at the 17 transit agencies studied average approximately 0.03 percent of transit operating expenses. This is the lowest program cost of all loss control programs studied. Exhibit 8-7 shows the percentages of expenses for each category.

The main program costs are for personnel, program expenses (literature, information and drug testing) and the EAP. These are discussed in detail in the following paragraphs.

EXHIBIT 8-7
ANTI-DRUG PROGRAM COSTS

	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Cost of Anti-drug Programs as a Percent of Operating Expenses	0.03	0.05	0.03	0.02
Range in Cost	$10,075 - 64,200	$5,880 - 30,413	$10,075 - 64,200	$18,329 - 42,393

8.7.1 Personnel Costs

The number of employees and the amounts of time involved in operating anti-drug programs varies. Types of employees who may participate in anti-drug program administration include:

- Supervisor of safety and training
- Director of human resources
- Director of transportation
- Occupational health nurse
- Health improvement coordinator
- Manager of safety
- Personnel program coordinator and/or attendance control coordinator.

Each of these individuals may spend a small portion of their time on the anti-drug program; the combined efforts of several people can be measured as total personnel equivalents. Among the agencies studied, the highest number of personnel equivalents assigned to anti-drug programs is 1.5. However, most agencies assign a far lower amount of staff time to this function. Exhibit 8-8 shows the average personnel equivalents and total average labor cost by transit agency segment.

8.7.2 Program Expenses

Other expenses associated with anti-drug programs may include testing costs, posters, brochures, subscriptions and staff development. Exhibit 8-9 shows the program expenses

EXHIBIT 8-8
PERSONNEL EQUIVALENTS ASSIGNED TO ANTI-DRUG PROGRAMS

	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Average Personnel Equivalents	0.32	0.12	0.42	0.33
Average Total Cost	$11,295	$5,161	$13,363	$13,960

EXHIBIT 8-9
EXPENSES OTHER THAN LABOR FOR ANTI-DRUG PROGRAMS

	All Transit Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Average Expense for Anti-drug Programs	$17,335	$11,870	$19,481	$19,680
Expense Range	$ 0 - $52,998	$5,880 - $17,200	$ 0 - $52,998	$ 3,360 - $36,800

including testing costs per segment. Testing costs among the agencies reviewed range from $3,360 to $36,800 annually based on the number of tests given and the cost per test. The agency which reported testing costs of $36,000 requires periodic testing whenever employees have their recertification physical. This accounts for approximately 726 tests annually at a cost per test of $40.

8.7.3 Employee Assistance Program Costs

The EAP costs are usually calculated on a per employee basis. For those agencies in the study reporting costs by this method, the range is $14 to $24 per year, per employee, with total annual costs at those agencies ranging from $5,800 to $25,740. Other estimates of EAP costs include $52,000 for a contracted EAP at one transit agency, and $51,200 for an in-house EAP at another transit agency.

* * * * *

This chapter has reviewed current anti-drug programs at the transit agencies studied and compared them with UMTA's drug testing rule. Of the 17 transit agencies studied, 13 have formal drug policies with written documentation. Four others have no formal programs or written policies; three of these, however, have testing programs. Eighty-eight percent of the agencies perform pre-employment drug tests and tests for reasonable cause. A small number of these also give tests during periodic physicals on hire date anniversaries. Post accident tests are given by 76 percent of transit agencies studied. Currently, the only time agencies perform random testing is after the employee has been treated in an employee assistance program.

UMTA's drug testing rule requires that recipients of Federal transit funding must establish effective, comprehensive anti-drug programs. To comply with UMTA's rule, an agency will be required to institute pre-employment, post-accident, reasonable cause, return to duty and random testing programs. Agencies must also have employee education and training programs which provide information on the effects of drug use and the detection of drug use. For most of the agencies studied, the major compliance problem will occur in instituting random testing procedures.

9.0 PROFILE OF WORKER'S COMPENSATION REDUCTION PROGRAMS

Concern over the number and severity of worker's compensation claims is growing. As state-legislated benefits continue to increase, transit agencies are finding it necessary to institute policies and programs to aid in containing the losses associated with worker's compensation. The following discussion of this relatively new area of transit management concern is organized into three sections:

- Organizational responsibility for worker's compensation reduction programs
- Worker's compensation reduction practices
- Effect of union contract provisions on worker's compensation costs.

A detailed discussion of the types and costs of transit worker's compensation claims is contained in Chapter 4, Profile of Losses.

9.1 ORGANIZATIONAL RESPONSIBILITY FOR WORKER'S COMPENSATION REDUCTION PROGRAMS

Those agencies in this study which have initiated programs to reduce worker's compensation have assigned the responsibility either to the human resources department or to an inter-departmental committee. Membership in the inter-departmental committees may include persons from the operations, maintenance, human resources, safety, training and risk management departments.

9.2 WORKER'S COMPENSATION REDUCTION PRACTICES

Transit agencies primarily utilize the accident prevention techniques discussed in Chapter 5, Profile of Safety Programs, to control the number and severity of worker's compensation claims. Three additional practices which are becoming accepted in the transit agencies studied are periodic physical examinations, light duty policies and wellness/fitness programs. These are described below.

9.2.1 Periodic Physical Examinations

Periodic physical examinations are required by 65 percent of transit agencies for operators and 47 percent for mechanics. The majority of these examinations are given every two years. In many states, the biennial examinations are required to satisfy requirements for current driver's licenses.

The principal advantage of periodic physical examinations is that they focus the attention of both the employee and the agency on any physical limitations or health conditions which may either warrant immediate attention or require follow-up. At a minimum, physicals usually include tests for high blood pressure, eye exams and hearing exams. Some agencies are now requiring their older employees to be examined yearly.

Benefits from periodic and pre-employment physicals can be maximized through education of the medical practitioners. The medical community can better understand, diagnose and treat health conditions that may make an operator, mechanic or other employee more vulnerable to injury if they have first-hand knowledge of the transit agency work environment. A "physicians day" at the transit agency can assist the practitioner gain this insight.

9.2.2 Light Duty Policies

Some type of light duty policy is in effect at 65 percent of the transit agencies assessed. These programs range from highly structured programs with written administrative procedures to programs where placements are made informally. The program is available to both operators and mechanics in some agencies; in others, it is available to operators only. In some agencies the unions are resistant to the establishment of this type of program, expressing concern over the effects on contractual seniority.

The pay-off from light duty comes in getting employees off the worker's compensation claims list and back to work. Benefits of a light duty policy noted by representatives of the Orange County Transit District are that injured employees who are able to continue working often recover faster and are able to resume their regular job sooner than those who stay at home and who do not have the opportunity to continue working.

The typical light duty program has a limit on the amount of time an employee can spend in the program. Some agencies only allow employees with short durational injuries to be in the programs. The type of work offered ranges from "make work" projects to situations where workers are placed in technical jobs and are trained in new skills such as computer data entry.

An additional difference in the way light duty policies are administered is found in the treatment of those employees who refuse to accept the assigned duties. In some agencies, failure to accept the assigned work results in loss of temporary disability benefits.

9.2.3 **Wellness/Fitness Programs**

Only 29 percent of the transit agencies examined have health screening or wellness programs. Fitness activities are offered in 24 percent of the agencies. Two of the 17 agencies in the study have back injury protection programs. Again, all of these programs range from highly structured, full facility operations (usually in connection with programs offered to employees of local governments) to informal, periodic programs.

Benefits to employers and businesses from establishing wellness/fitness programs have been noted in private industry studies. A two year Blue Cross & Blue Shield study of the impact of health promotion on employee health found positive results including improvements in employee blood pressure, cholesterol, weight levels and a drop in absenteeism.* In a study by Marsh & McLennan, 57 percent of surveyed Fortune 1000 company and municipal/state government executives said they now offer wellness programs that deal with substance abuse.** Other areas of benefit from wellness programs include improved nutrition practices and cessation of smoking.

Many city and county government units are now providing some sort of wellness/fitness program to their employees in recognition of the cost benefit to both employees and management. Worksite wellness/fitness programs are sometimes very comprehensive, allowing the employee and his family to have periodic health screenings and, in some cases, enjoy sports and exercise activities. There may be a charge for some of these services.

9.3 **EFFECT OF UNION CONTRACT PROVISIONS ON WORKER'S COMPENSATION COSTS**

The costs resulting from worker's compensation claims are impacted by provisions in union contracts. Key aspects of these provisions are presented in the following paragraphs. Highlights of State laws which impact worker's compensation costs are presented in Chapter 11.

9.3.1 **Worker's Compensation Supplements**

Contracts at many transit agencies require supplemental payments in addition to worker's compensation. Some have

---

* "New Direction - A Worksite Wellness Study," by Health Services Foundation, a Research Affiliate of the Blue Cross & Blue Shield Association, 1988.

** "Substance Abuse in the Workforce" by Marsh & McLennan Company Inc., New York, 1988.

"injured employee salary continuation" payments which, when combined with worker's compensation, give the employee full pay for a specified time. In some cases employees can supplement worker's compensation with accrued sick and vacation leave after the time limit on the salary continuation payments has elapsed. Other provisions allow employees to continue to earn vacation and sick leave at the regular rate. Some contracts stipulate that benefits are to be increased if injury is from a non-aggravated assault. The net effect of such contract stipulations at some transit agencies may be to make worker's compensation more attractive and may tempt some workers to abuse the rules.

9.3.2 Light Duty Policies

Provisions in some contracts would prevent the establishment of light duty programs through restrictive clauses on the kinds of transfers and work assignments allowable.

9.3.3 Termination Policies

The amount of time an employee can be away from the workplace before being terminated affects worker's compensation costs. An agency which reduced this time from 24 to 12 months through negotiation noted a considerable improvement in the duration and costs of its worker's compensation claims.

9.3.4 Medical Cost Containment Policies

One transit agency studied had a clause in its union contract disallowing pre-existing conditions for consideration in worker's compensation cases. Because of the high cost of medical costs many states now have or are considering medical fee schedules to control payments made to providers of medical care. Other new cost containment approaches include auditing health care bills, evaluating whether the frequency and duration of treatment is appropriate to the injury and providing settlements in a series of regular payments rather than a lump sum.

9.3.5 Worker's Compensation Waiting Periods

As discussed above, many unions negotiate payment of worker wages during the statutory waiting periods. This contributes to increased claims, since the employee no longer has to sacrifice a loss in pay for claims of short duration.

* * * * *

This chapter has reviewed programs to reduce worker's compensation losses. Many aspects of worker's compensation claims are controlled by external factors such as state statutes and union contract provisions. Efforts to reduce claims and costs must focus on accident prevention techniques, cooperative efforts with unions, strong record management systems, medical cost containment practices and other programs that have proven records of success.

In this chapter, three program areas that are currently in use by the 17 transit agencies were discussed: periodic physical examinations, light duty programs and wellness/fitness programs. Sixty-five percent of the agencies examined already have some form of light duty and periodic physical examination program. At the time of assessment, only 29 percent offered wellness/fitness activities. Not surprisingly, the programs reviewed were quite varied, ranging from highly structured programs with well-defined policies to very informal programs. An example of what can be done to reduce worker's compensation losses is illustrated below based on the experience of Denver RTD (given suitable laws, other transit agencies could consider similar approaches).

> When Denver RTD found itself well over its worker's compensation budget, it decided to radically overhaul its worker's compensation procedures and practices. It made the worker's compensation issues in the union contract a strike issue and took out all of the on-the-job injury clauses in the contract. Denver RTD had been supplementing worker's compensation benefits to bring worker's pay up to 100 percent. The agency stopped this practice. It also suspended the light duty program temporarily while a new policy was developed. The new policy required employees to come back to work within 90 days or when maximum medical improvement is reached (whichever is shorter). If the employee is not able to return to his job, he has another 90 days to bid on another position. If he does not do this, he is terminated from the agency. The agency is now in the process of settling all old claims. It has also instituted annual physicals that are oriented towards making lifestyle changes to avoid future problems. A District-wide joint management/labor wellness and substance abuse program is in place to address problems such as stress management and weight loss.

10.0 PROFILE OF RISK MANAGEMENT PROGRAMS

This chapter describes the approaches taken by the 17 bus transit agencies to manage risk. This discussion includes a summary of the areas of risk coverage and the methods currently in use to provide the needed coverage. The chapter is organized into the following topics:

- Observations about transit agency risk management
- Organizational responsibility
- Areas of risk coverage
- Methods of providing coverage
- Claims administration and risk management costs.

Each of these topics is discussed below.

10.1 OBSERVATIONS ABOUT TRANSIT AGENCY RISK MANAGEMENT

Liability coverage in the transit industry is not as controversial a topic as it was a few years ago when insurance rates skyrocketed. However, other risk management issues, particularly those related to worker's compensation, are being debated. The following observations summarize the trend in the current insurance market, increasing use of self-insurance and the high cost of worker's compensation.

10.1.1 Insurance Market Trends

Many transit agencies increased their self-insured risk coverage after the insurance crisis of 1985-1986. Some lost liability coverage when the Transit Casualty Insurance Company failed in 1985; other transit agencies adopted complete self-insurance when they found that they could not obtain excess liability coverage as they had in the past. Since that time, the insurance market has softened. Insurance companies have modified their rates and are more aggressively seeking transit business. Most transit agencies will continue to retain a large portion of their risk. Those which cannot establish sufficiently comfortable reserves may return to the market for excess liability insurance. Others, however, plan to continue their adopted policies of self-reliance in relation to risk management.

10.1.2 Benefits of Self-Insurance

Many of the transit agencies studied are confident of their ability to retain risk. Some suggest there are advantages to self-insurance, so long as adequate reserves are available. Many of the systems employ their own claims adjusters and suggest that this approach to working directly with the claimants may help to reduce losses and improve public relations. In-house claims adjustors may be able to better develop strategies to minimize settlements by becoming familiar with local plaintiffs' attorneys. Also, through careful and courteous interaction, the claim handlers may retain more customers who sustained minor injuries while riding.

10.1.3 Impact of Worker's Compensation Laws

Several transit managers pointed out that employees can earn more money tax-free from worker's compensation than from their regular pay. All transit managers expressed the opinion that the high worker's compensation rates may tempt workers to feign injuries or exaggerate the severity of an injury in order to receive time off on worker's compensation. They point out that worker's compensation coverage is mandatory and entirely structured by state law and for this reason it is entirely out of their control. The transit industry may want to examine this problem in greater depth. If a sufficient number of cases of suspected abuse can be documented, then perhaps the State legislatures should be made aware of the extent of this problem.

10.2 ORGANIZATIONAL RESPONSIBILITY FOR RISK MANAGEMENT PROGRAMS

In the transit agencies studied, risk management is predominantly located in the financial or administrative services department. As shown in Exhibit 10-1, 64 percent of risk managers are associated with a financial or administrative function. All four of the county/municipal transit agency risk managers are located in the parent government agency, also typically in the finance department. One regional transit agency has placed risk management in the legal department, and at one contractor managed agency the risk manager is the Assistant General Manager.

The organizational relationship between the safety and risk management departments is an issue under debate. Some insurance industry sources believe that optimally the risk manager and safety manager should exist within the same department for maximum coordination. From the point of view of reducing losses in bus transit, this may be desirable and may in fact result in better communication. A study of the coordination of functional

EXHIBIT 10-1
ORGANIZATIONAL RESPONSIBILITY FOR RISK MANAGEMENT

	Percent of Transit Agencies			
RISK MANAGEMENT ORGANIZATION	All Agencies	Contractor Managed Transit Agencies	Regional Transit Agencies	County/ Municipal Transit Agencies
Assistant General Manager	6	25	--	--
Legal Department	6	--	11	--
Financial and Administrative Services Department	64	75	89	--
County/Municipal Government Financial Department	24	--	--	100

areas within transit agencies found that personnel are more likely to communicate horizontally within a department as compared to across departments or across the organization.* The key question is, should the safety manager be working most closely with the risk manager or with the directors of training, operations or maintenance.

Among the transit agencies in the study, only Denver RTD and Portland Tri-Met have placed their risk manager and safety manager within the same department. At Denver, the risk manager and safety manager both report to the legal department. At Tri-Met, the risk manager is in the financial services group, and the safety manager is in the personnel services group; however both groups are organizationally subordinate to the director of financial and administrative services. At all other agencies the two responsibilities are in different departments.

---

* University of California, Institute of Transportation Studies and Graduate School of Management, "The Coordination of Functional Areas Within Transit Agencies Through Networks of Managerial and Professional Interaction," June 1985.

10.3 AREAS OF RISK COVERAGE

The principal areas of loss associated with operating a transit system were introduced in Chapter 4. They are:

- Auto/bus liability (claims due to bus accidents)
- Worker's compensation (claims due to industrial or bus accidents)
- Property exposure
- General liability
- Professional liability.

The predominant areas of losses are auto/bus liability and worker's compensation. These categories account for the majority of transit agency losses due to risk. The other three categories, property exposure, general liability and professional liability, represent a small percentage of transit agency losses. The following paragraphs provide a more specific discussion of the types of coverage needed in each loss area.

10.3.1 Auto/Bus Liability

Auto/bus liability is one of the two largest areas of losses among transit agencies. This coverage protects against losses due to damage caused by a transit bus. Typical losses include payments for the following:

- Medical treatment for bodily injury to passengers, pedestrians, motorists or other persons involved in an accident (injuries to bus operators are covered by worker's compensation)
- Property damage caused by a transit bus
- Compensatory and/or punitive damages resulting from a bus accident
- Personal injury protection (PIP) benefits payable to injured persons under no fault insurance.

A discussion of State laws that impact liability settlements is contained in Chapter 11.

10.3.2 Worker's Compensation

Worker's compensation includes two areas of risk, worker's compensation (compensation for injury from an occupational accident) and employer's liability.

- Worker's Compensation. This is a large area of loss for most transit systems. Worker's compensation coverage is mandatory and is structured by state laws. For specific injuries or disabilities, the maximum risk can be estimated at the time of the diagnosis since the risk for a specific injury is limited by statute and not by jury award. (A detailed discussion of worker's compensation laws is presented in Chapter 11.)

- Employer's Liability. Employer's liability is an infrequent source of loss. It includes coverage protecting the transit agency against a lawsuit filed by an employee and/or his family. Areas of exposure include the normal responsibilities of an employer such as proper maintenance of grounds, facilities and working areas.

10.3.3 Property Exposure

Risk to transit property is referred to as an exposure and not a liability. A liability is an obligation to a person or group other than the insured organization itself. Protection for property exposure at bus transit agencies typically includes coverage against property damage, crime and physical damage to rolling stock. The exposures which the transit agency is protecting against include losses due to fire, flood, other natural disasters, equipment failure and crime.

10.3.4 General Liability

General liability includes all potential risk from transit operations except damage caused by a transit bus. (Damage caused by a transit bus is covered under auto/bus liability.) General liability exposures include the following:

- Exposures Created by the Premises. Exposures created by the premises include slippery sidewalks or storage of waste oils.

- Exposures Created by an Employee Away from the Premises. This category includes potential damage caused by an employee away from the transit agency premises on business but not involving a transit vehicle.

- Crimes Committed Against Patrons by a Third Party. This category includes crimes such as robbery, rape assaults, etc. committed by persons unconnected with the transit agency.

In addition, for the purposes of this study, general liability encompasses other types of exposure including advertiser's liability, personal injury liability and contractual liability.

10.3.5 Professional Liability

Professional liability includes potential risk from errors of management or professional employees. Potential exposures include:

- Professional Errors and Omissions. Professional errors or omissions may be made by the transit system's legal or fiduciary staff, or by administrators of employee benefits. (Fiduciaries are responsible for the management of invested funds, such as retirement funds).
- Wrongful Acts Committed by Public Officials. Public official wrongful acts that result in liability claims are a rare but potential area of risk.

No losses due to professional liability were identified among the 17 agencies in this study.

10.4 METHODS OF PROVIDING COVERAGE

Seven methods of providing coverage for the above listed risk areas were identified at the transit agencies studied. These are:

- Avoidance
- Loss prevention
- Risk retention
- Insurance transfer
- Joint risk retention and insurance transfer
- Joint risk retention and group loss financing
- Non-insurance transfer.

All of the agencies apply avoidance and loss prevention methods to reduce risk. In addition, all of the agencies transfer contractual liability to third parties or contractors. Exhibit 10-2 summarizes the application of other coverage methods to the risk areas by the transit agencies studied.

The numbers in the non-insurance transfer category reflect the fact that all of the county/municipal agencies transfer their risk to the parent agency. The contractor managed and regional transit agencies are more independent in their selection of coverage.

EXHIBIT 10-2
METHODS OF PROVIDING COVERAGE BY RISK AREA AT THE TRANSIT AGENCIES STUDIED

RISK AREA	PERCENT OF TRANSIT AGENCIES				
	RISK RETENTION	INSURANCE TRANSFER	JOINT RISK RETENTION AND INSURANCE TRANSFER	JOINT RISK RETENTION AND GROUP LOSS FINANCING	NON-INSURANCE TRANSFER
WORKER'S COMPENSATION	29%	6%	41%	6%	18%
AUTO/BUS LIABILITY	41%		29%	12%	18%
PROPERTY EXPOSURE	6%		65%	6%	23%
GENERAL LIABILITY	41%	6%	24%	6%	23%
PROFESSIONAL LIABILITY	47%	6%	18%	6%	23%

Some form of risk retention (self-insurance), or a combination of risk retention and commercial insurance is preferred by most transit agencies for other coverage needs. Several of the agencies have moved to complete self-insurance for risk arising from worker's compensation, auto/bus liability, general liability and/or professional liability. Each method of providing coverage is discussed below.

10.4.1 Avoidance

All bus transit operations involve risk-taking. Occasionally, a decision may be made to entirely avoid a risk by eliminating an existing service or area of operation, or failing to implement a proposed new undertaking that is too risky. For example, a transit agency may decide to detour a bus route away from a deep construction excavation to avoid potential threat to the passengers. In a more specific example, one transit agency declined the opportunity to provide service for certain school bus routes because excessive rowdiness and bus vandalism had been experienced on those routes. Service was instead provided by a private bus company. All decisions concerning risk avoidance are made with acknowledgement of the obligation of public transit to meet the needs of the public.

10.4.2 Loss Prevention

Once it is determined that an operation involving risk is to be continued, the transit agency may apply as many techniques to prevent losses as are possible within cost limitations. To accomplish this, risk areas and the hazards contributing to them are identified and corrective and/or preventive action is taken to reduce the risk. Loss prevention includes the programs addressed in Chapters 5 through 9 of this report involving safety, hiring, training, anti-drug and other programs to reduce accidents and worker's compensation claims. All agencies in this study apply loss prevention techniques in controlling risk.

10.4.3 Risk Retention

Occasionally, due to swings in the insurance market, it is not economically feasible to purchase insurance on certain risk exposures. This was true during 1985 when liability insurance rates increased dramatically and many transit agencies opted to retain certain risks.

Under risk retention the transit agency provides its own funding to cover a risk rather than purchasing insurance. Among medium to large transit agencies, self-insured retention (SIR) up to a specified dollar amount is common. Of the 13 independent agencies studied, six have retained all risk arising from auto/bus liability, and four have retained all risk arising from worker's compensation losses.

Each area of potential risk is evaluated by transit agencies as a candidate for risk retention. Conditions under which risk is retained typically involve one or more of the following conditions:

- Small Potential Loss. Some risks involve a potential annual loss that is relatively so small that it may be treated as a normal operating expense. An example is professional liability, an area in which there normally are few annual losses. Five of the agencies studied have retained all risk for professional liability.

- High Insurance Rates Combined with Manageable Potential Loss. Some areas of risk combine the following three conditions which make risk retention a good choice:

    - The probability or frequency of loss is so great that loss is almost certain to occur.

    - The rates for insurance are disproportionately high.

  - Potential loss amounts are within the financial ability of the transit agency to retain them.

- Unaccessible Insurance. A risk is retained when insurance is either not available or is only available at prohibitive costs. The latter was the situation faced by many transit agencies in 1985 and 1986. By 1986, the insurance costs for auto/bus liability had become so prohibitive that many agencies opted for self-insurance.

- Low Insurance Rates Combined With Low Potential Loss. If the probability of occurrence is so remote that an ordinarily prudent transit agency will not incur any amount of premium expense for insurance, then the risk is often retained. One example is the liability arising from errors in administering an employee benefit plan.

Risk retention in this discussion implies retention of all risk. It is distinguished from joint risk retention and insurance transfer where the transit agency retains some risk by paying a large deductible, but insures the remainder of the risk.

10.4.4 Insurance Transfer

This method of coverage involves transferring risk to an insurance company by purchasing insurance against certain exposures. A full insurance transfer means that the transit agency retains no risk and there is no deductible. A partial insurance transfer usually requires the transit agency to pay a deductible.

Risk is managed by insurance transfer under the following typical conditions:

- High Potential Loss. In some cases the amount of potential loss may be too high to be safely retained by a bus transit agency.

- Insurance Requirement. In some situations, a bus transit agency may be required by law or contract to carry insurance against risk.

- Acceptable Insurance Rates Combined with Unmanageable Potential Loss. When the probable fluctuation in annual losses is too great to be covered under normal operating expenses and insurance is available on acceptable terms, the transit agency may opt to cover the risk with insurance. An example is insurance for advertising liability. At one transit agency, this policy carries a limit of $1 million per occurrence for damages arising from advertising libel, slander, copyright infringement, plagiarism, etc. However, the annual premium, $483, is low enough to make the insurance coverage acceptable.

10.4.5 Joint Risk Retention and Insurance Transfer

A single loss area, such as auto/bus liability or worker's compensation, may be covered by a combination of risk retention and insurance. A large deductible on an insurance policy is a form of risk retention. Risk may also be retained by the transit agency up to a certain limit, with excess insurance purchased for all amounts in excess of that limit.

Coverage through this method has been chosen by 70 percent of transit agencies for coverage against property exposures. Risk areas for which joint insurance transfer and risk retention is preferred generally combine the following two conditions:

Relatively low amount risks that can be safely retained	and	Relatively high amount risks that cannot be safely retained but with insurance (for high amount risks) available at affordable costs.

For example, there are several ways to combine a self-insured retention with excess liability coverage for auto/bus liability. One transit agency's excess coverage has five tiers, with a different insurance company supplying each tier of coverage. Another transit agency has placed its excess auto/bus liability coverage with a single insurance company.

10.4.6 Joint Risk Retention And Group Loss Financing

Two of the agencies included in this study are members of groups which provide financing for large losses. One is a member of a transit liability pool, the other is part of a group loss financing plan. New forms of coverage such as these may increase among transit agencies. Contributions to non-traditional insurance programs are now eligible for reimbursement under UMTA grant programs. Losses under these programs are not eligible for reimbursement. The operation and benefits of the pool and group financing approaches are described below.

(1) Transit Liability Pool

The Greater Richmond Transit Company (GRTC) is a member of the Virginia Transit Liability Pool. This pool was established after transit insurance costs increased dramatically and the number of insurance providers willing to provide transit insurance decreased. In 1986, the

Virginia Association of Public Transit Officials began investigating the formation of a group insurance program. The Virginia Department of Transportation, using state aid and UMTA section 8 funds, provided assistance by engaging a consultant to conduct a transit insurance study. The result was a recommendation to form a transit pool under Virginia's Local Government Group Insurance Pool law.

Today there are six transit agencies in the pool. It provides up to $1 million comprehensive auto/bus and general liability coverage to each agency, with higher limits available on an optional basis. A deductible of $250,000 is retained by GRTC; annual premiums are paid to the pool as with any insurance policy.

During its first year of operation, the pool collected $1.4 million in member premiums and $30,000 in interest income for a total income of $1,430,000. This was offset by $1,135,000 in expenses including:

- $900,000 for excess insurance premiums
- $185,000 for service agent, legal and administrative fees
- $50,000 set aside for potential and paid losses.

The remaining funds of $300,000 from the first year of operations will be returned to the members based on their individual loss records.

(2) Group Loss Financing Plan

A variation on the approach of joint risk retention and insurance transfer is the Group Loss Financing Plan instituted by the Chicago RTA in 1986. The plan members are the RTA and its subordinate entities including PACE (suburban bus division), CTA (Chicago bus division) and METRA (Chicago commuter rail). The stated purpose of the plan is to provide loans to the members as needed to pay for high settlement costs from claims in areas including personal injury, property damage, advertising injury and loss of use of premises.

The concept of the Group Loss Financing Plan was developed after the insurance crisis of December 1985. At that time insurance quotes were so high that the RTA, the CTA and PACE chose not to insure. Consultants were brought in to help develop an alternate method of meeting their insurance needs.

Obtaining funding for the Group Loss Financing Plan was possible due to the RTA's organization as a public entity. A $50 million reserve fund was capitalized through the sale of bonds; the interest on the bonds is being paid by the RTA through discretionary receipts. Thus, PACE and the other plan members are not required to invest in the fund and they pay no premiums. The monies, however, are available when needed.

Each plan member has a specified self-insured retention per occurrence. Losses for each occurrence in excess of the SIR and up to the limit of $50 million can be paid through loans from the fund. When a loan is taken to pay a liability cost, the amount must be paid back to the fund with interest.

10.4.7 Non-Insurance Transfer

In contractual relationships, the transit agency usually takes the option of transferring the responsibility of risk to another party. This is true in all situations where government, business or legal practices/traditions permit the other party to be held responsible for risk. Usually the transit agency will request proof of insurance or adequate coverage from the other party.

Another form of non-insurance transfer is illustrated by all of the county/municipal agencies in the study. Risk is covered under an umbrella policy held by the State, county or city which holds title to all of the transit system's property. Thus, the transit agencies have transferred these risks to a higher government agency without the cost of an insurance policy.

10.5 CLAIMS ADMINISTRATION AND RISK MANAGEMENT COSTS

Claims administration and risk management costs of the 17 transit agencies consume an average .71 percent of operating expenses. Average annual expenditures are approximately $556,000. The discussion of costs is organized into three sections as follows:

- Claims administration
- Risk management administration
- Premiums.

10.5.1 Claims Administration

Among the independent agencies studied, most perform their own claims adjustment and administration. Some transit agencies prefer this approach since it enables them to exert more influence in defense against claims and in negotiating settlements. It has been found that claimants who are dealt with fairly often make good witnesses in other claims cases arising from the same incident. Claims for auto/bus liability and worker's compensation are typically handled by separate departments.

(1) Auto/Bus Liability Claims Handling

Auto/bus liability claims are predominantly administered in-house by the transit agencies. Of 14 agencies that provided claims handling cost information, 10 agencies assign liability claims to their own in-house staff with no contractor assistance. This supports the philosophy of some transit risk managers that an in-house claims handling staff has an incentive to protect the interests of the transit agency as well as the opportunity to provide good public relations with claimants who, if dealt with fairly, may return to using transit service.

Exhibit 10-3 shows that agencies having a linehaul fleet size of less than 500 buses appear to spend less on claims handling when this function is performed in-house rather than contracted. Among the agencies with larger fleet sizes (500 to 750 buses) the data indicates that in-house claims handling may result in higher labor costs than when the work is contracted. However, too few large agencies provided contractor claims handling costs to draw a conclusion on this point.

EXHIBIT 10-3
IN-HOUSE VS. CONTRACTOR
LIABILITY CLAIMS HANDLING COSTS

LIABILITY CLAIMS ADMINISTRATION	Linehaul Bus Fleet Size	Average In-House Labor $*	Average Contractor Amount $	Average Total $	No. of Agencies Reporting
In-House	200-499	68,941	----	68,941	2
	500-750	288,915	----	288,915	5 (Bus only)
	500-750	335,727	----	335,727	8 (Bus,Rail)
Contracted	200-499	16,215	68,300	84,515	2
	500-750	63,659	187,456	250,115	2 (Bus,Rail)

* Includes benefits

Reported liability claims handling expenses other than labor vary. These expenses may include:

- Outside attorneys
- Actuarial studies to determine reserve levels
- Travel for claims adjustors
- Claims processing computer systems
- Materials.

Reported expenses range from $3,500 to $268,900 for agencies with in-house claims handling and from $50,000 to $185,000 for agencies with contracted claims handling.

(2) Worker's Compensation Claims Handling

In-house handling of worker's compensation claims may be slightly more cost effective than contracting. As shown in Exhibit 10-4, three transit agencies with fleet sizes of from 250 to 499 buses paid an average $39,174 for in-house staff to process worker's compensation claims. In comparison, two transit agencies in the same fleet size group paid an average $52,250 for contracted claims handling services plus $38,674 for in-house staff for a total average cost of $90,924.

Among larger fleets (500 to 750 buses) there is a small (3 percent) difference in average labor costs between bus-only agencies that contract out claims handling and those that do not. When bus and rail operations are considered,

EXHIBIT 10-4
IN-HOUSE VS. CONTRACTOR 1987
WORKER'S COMPENSATION
CLAIMS HANDLING COSTS

WORKER'S COMPENSATION CLAIMS HANDLING	Linehaul Bus Fleet Size	Average In-House Labor $*	Average Contractor Amount $	Average Total $	No of Agencies Reporting
In-House	200-499	39,174	----	39,174	3
	500-750	95,172	----	95,172	2(Bus Only)
	500-750	102,999	----	102,999	5(Bus,Rail)
Contracted	200-499	38,674	52,250	90,924	2
	500-750	38,668	54,022	92,700	2(Bus Only)
	500-750	49,265	105,022	154,287	3(Bus,Rail)

* Includes benefits

the average total costs for contracting are 50 percent greater than the costs for in-house claims processing.

10.5.2 Risk Management Administration

The transit agency risk managers were asked to estimate the amount of time they spend on risk management administration excluding claims handling. Risk management activities include:

- Soliciting and evaluating bids for insurance
- Reviewing coverages with a broker
- Reviewing self-insurance reserve funds
- Reporting to management on risk management concerns.

Most risk managers attribute a fraction of their time and of their secretaries' or other staff members' time to these activities. The multiple fractions of staff time, when averaged by segment, amount to the equivalent of from .44 to 1.53 persons assigned to risk management administration. Exhibit 10-5 shows the average expenditures by study segment. The contractor managed agencies show the lowest average expenditures. In fact, at two of the three agencies reporting in this segment, the risk manager has a broad range of responsibilities beyond risk management and assigns a small portion of time to this function.

EXHIBIT 10-5
PERSONNEL RESOURCES ASSIGNED TO RISK MANAGEMENT ADMINISTRATION

	Average 1987 Expenditures		
RISK MANAGEMENT ADMINISTRATION	Contractor Managed Transit Agency	Regional Transit Agency	County/ Municipal Transit Agency
Personnel Assigned	.44	1.53	.99
Labor Cost ($)*	19,791	49,202	35,286
No. of Agencies Reporting	3	5	4

*Includes benefits.

10.5.3 Insurance Premiums

When a transit agency funds its risks by purchasing insurance to cover its losses, a premium must be paid to the insurance company. The premium is calculated by the insurance company to be large enough to cover predicted losses of the agency as well as its own expenses such as commissions, overhead, premium taxes and profits. (Statutory limits on liability, discussed in Chapter 11, are a factor.) Through premiums, transit agencies can pay a higher price for coverage than they might incur if the risk was retained.

Premium expenses typically consume .84 percent of the transit operating budget. Each agency chooses its own area and amount of insured coverage based on its risk management strategy. The ranking in terms of average cost of premiums in different coverage areas paid by the transit agencies is (1) auto/bus liability, (2) property exposure, (3) worker's compensation, (4) general liability, (5) professional liability. As shown in Exhibit 10-6, the average auto/bus liability premium paid by the agencies is almost five times higher than the average property exposure premium. The number of agencies reporting in each category points out how few agencies buy commercial insurance in areas other then property exposure. Additional discussion of each coverage area is presented below.

EXHIBIT 10-6
INSURANCE PREMIUMS

Area of Coverage	Average Premium Amount ($)	No. of Agencies Reporting
Auto/bus liability	548,174	5
Property exposure	116,841	10
Worker's Compensation	101,728	8
General liability	26,743	3
Professional liability	1,138	4

(1) Auto/Bus Liability Premiums

Seven out of the 13 independent transit agencies are self-insured for auto/bus liability with no excess coverage. The remaining six agencies pay premiums for excess coverage.

Bus liability insurance premiums are a very substantial expense for transit agencies; the average 1987 payment for five agencies was $548,174. A much higher premium of

$1,430,000 was paid by a sixth agency, a regional transit agency that also operates a large rail system.

(2) Worker's Compensation Premiums

Worker's compensation benefits are defined by statutes and union contracts, thus coverages and premiums chiefly reflect the prevailing laws as well as the transit agency's own loss experience.

Among the 13 contractor managed and regional transit agencies, eight pay a premium for excess coverage of worker's compensation claims; the other five are self-insured with no excess coverage. The average premium paid by eight transit agencies is $101,728. The individual agency premiums range from approximately $8,000 to $203,390.

(3) Property Exposure Premiums

All the transit agencies studied carry some form of insurance for property exposure. In cases where the property is owned by a State, county or municipal government, the transit property is protected under the government's risk coverage. This is true for five of the transit agencies in this study.

The independent transit agencies (i.e. contractor managed and regional) paid an average of $116,841 for bus transit property coverage as shown in Exhibit 10-6. Two agencies not included in the calculation own significant rail property. As would be expected, their property exposure premiums are higher at approximately $250,000 and $793,837.

Most of the property insurance policies can be categorized in one of two groups: all risk or specified coverage.

- All Risk Property Coverage. Some policies specify coverage of all risk to buildings and buses. In these policies, several insurance companies may each be responsible for a different tier of coverage up to the maximum limit. Premiums for all risk property coverage are paid by four of the regional transit agencies. Examples of premiums and coverages is shown in Exhibit 10-7.

- Specified Property Coverage. Property insurance at other transit agencies typically identifies distinct areas of coverage with deductibles and premiums specified for each. For example, one

EXHIBIT 10-7
EXAMPLES OF PREMIUMS PAID FOR ALL RISK PROPERTY COVERAGE

1987 Premium ($)	Insurance Limit ($)	Deductible ($)	Type of Property Coverage
87,125	226,000,000	25,000	Bus
126,793	140,118,000	50,000	Bus
250,000	305,000,000	250,000	Bus/Rail
793,837	100,000,000	750,000	Bus/Rail

transit agency's property coverage includes insurance limits and deductibles for the following items:

- Fire and extended coverage
- Flood and earthquake
- Bus physical damage
- Bus radios
- Automobile physical damage
- Boiler and machinery
- Radio computer equipment
- Data processing equipment
- Office theft equipment
- Employee forgery
- Employee disappearance
- Felony assault.

The greatest risk to property is from fire. Insurance coverage of the risk to buildings from fire is characterized by lower deductibles than other types of transit property insurance and are typically in the $1,000 to $5,000 range.

(4) General Liability Premiums

General liability is an area that is frequently self-insured by the transit agencies. Information on general liability premiums was available from only three agencies. Among those agencies, the average amount paid was $26,743. Management of general liability risk at the other 14 agencies is as follows:

- Four agencies transfer the risk to a county or municipal government
- One agency transfers the risk to the State government which owns the property
- Three agencies provide for general liability risk in their auto/bus liability coverage
- Six agencies are self-insured with no excess coverage for general liability.

(5) Professional Liability Premiums

Only four out of 13 independent transit agencies paid premiums for professional liability coverage in 1987. Examples of the types of coverage, amount of deductibles and amount of premiums are shown in Exhibit 10-8.

EXHIBIT 10-8
1987 PROFESSIONAL LIABILITY PREMIUMS

Area of Coverage	Deductible ($)	Coverage Limit ($)	Premium ($)
Fiduciary Liability	1,000	1,000,000	3,311
Professional Errors	0	2,000,000	650
Professional Errors	1,000	1,000,000	375
Public Officials Wrongful Acts	0	15,000	217
Public Officials Wrongful Acts	25,000	2,500,000	18,494

Risk from professional liability is covered by means other than insurance premiums at the nine other contractor managed and regional transit agencies:

- One agency transfers all risk to the State government which owns the agency assets
- Two agencies include professional liability coverage in their umbrella coverage for auto/bus and general liability
- Six agencies are self-insured with no excess coverage for professional liability.

Premiums for different agencies vary due to differences in requirements and loss history. Premiums tend to be paid most often for losses that are low in frequency and high in severity.

10.5.4 Self-Insured Retentions

Transit agencies can insure themselves against risk by providing contingency reserve funds to cover expected large losses. Government agencies such as cities and counties typically set aside large amounts to cover all of the government's risk. The City of Detroit, for example, has a general self-insurance fund of $25 million for liabilities arising from the City's activities. Benefits of risk retention include cost savings in comparison with purchasing insurance, increased incentive to lower losses and greater control over efforts to combat unjust claims.

Among the transit agencies examined, self-insured reserves are more typical of the county/municipal agencies and regional transit agencies. County/municipal transit agencies are covered by umbrella reserves established by the local government. Six out of nine regional transit agencies have self insurance contingency funds for bus transit risk ranging from $1 million to $10 million. One of four contractor managed agencies has a contingency reserve fund against risk.

* * * * *

In summary, risk management decisionmaking chiefly concerns determining the proper mix between retaining risk and transferring risk to an insurance company through the purchase of insurance. At the transit agencies studied, the risk manager is typically located in the finance department and has infrequent interaction with the safety manager. Only two regional transit agencies co-locate these positions in the same department.

Auto/bus liability and worker's compensation require a much larger investment in time and money than other areas of risk. Most transit agencies prefer to have control over the claims handling process and provide in-house staff for this purpose. Two agencies participate in a loss financing group or pool which provide benefits of lower cost and broader coverage and protection. Retention of risk is increasing among transit agencies. Agencies prefer this cost effective alternative to insurance because it entails more control over the defense against claims and more opportunity to encourage claimants to return to using transit.

11.0 SUMMARY OF STATE LAWS THAT IMPACT TRANSIT LOSSES

State statutes and provisions in labor contracts play major roles in the way worker's compensation programs are administrated and in the amount of benefits payable to injured employees. Many benefit amounts are legislated. Of equal importance are state laws impacting liability claims. Thus, whenever there is a discussion of claims costs at various cities, the statutes that affect those claims costs must be considered. Some understanding of these factors is essential to understanding the potential of programs to reduce losses.

This chapter is organized into two sections as follows:

- Impact of state laws on worker's compensation program requirements
- Impact of state laws on auto/bus liability.

The following discussion summarizes laws in the 50 states as they impact loss control in the transit industry.

11.1 IMPACT OF STATE LAWS ON WORKER'S COMPENSATION PROGRAM REQUIREMENTS

State laws specify worker's compensation insurance requirements, coverage classifications, benefits provided and administrative functions. Each transit agency's worker's compensation program is constrained by the worker's compensation statutes in its state. Key elements of worker's compensation laws and highlights of other laws that affect worker's compensation costs are presented below.

11.1.1 Worker's Compensation Insurance Requirements

Each of the 50 states and the District of Columbia require worker's compensation insurance. Self-insurance is now permitted in all states with the exception of North Dakota, Texas and Wyoming. Sixteen of the 17 transit agencies studied are self-insured. Many transit agencies prefer self-insuring because it allows more control over claims adjusting and eliminates the insurance company's profit and overhead.

11.1.2 Benefits Provided Under Worker's Compensation

The benefits provided to injured employees under worker's compensation are:

- Cash benefits, including both impairment benefits and disability benefits
- Medical benefits, provided without dollar or time limits except in Arkansas, New Jersey and Ohio. (For the ten transit agencies which provided data on the medical portion of claims costs, medical costs accounted for 44 percent of total costs. This compares with the national average for all industries of around 40 percent).
- Rehabilitation benefits, including both medical and vocational rehabilitation

Disabilities fall into four classifications: temporary total, permanent total, temporary partial and permanent partial. Most transit industry awards are either for temporary total or permanent partial disability where the employee is expected to recover and return to work.

11.1.3 Differentials Among States

There has been a consistent increase in the differences in benefits and other aspects of worker's compensation laws among states. Some experts believe that, as time goes on, this will lead to pressure on high-benefit states to cut back so as not to drive away businesses. This concern has resulted in states such as Iowa freezing benefit levels, thus producing a decrease in real benefits. In most states, however, benefits are rising. Thirty-nine states and the District of Columbia now provide for automatic annual adjustments of maximum benefits based on the state average weekly wage (SAWW). Benefits are prescribed as percentages of worker's wages with stated minimum and maximum allowable amounts. Maximum durational periods are also prescribed. Data from 1987 shows the following ranges for benefits for temporary total disabilities:

(1) Percentage of Worker's Wages

Forty-three states pay workers 66 2/3 percent of wages while out on worker's compensation. Four states pay percentages between 60 and 70 percent. Three states use 80 percent of spendable earnings as the reimbursement formula.

(2) Maximum and Minimum Payments

Thirty-nine states and the District of Columbia now have a maximum weekly benefit that equals or exceeds 66 2/3 percent of the statewide average weekly wage for temporary total disability cases. Twenty-nine of these pay 100 percent or more. Of the transit agencies studied, maximum payments per week ranged from $175 to $643. (Thus it is conceivable that workers out for injuries can earn close to their normal pay). Minimum payments ranged from $20 to $128.60 in the agencies studied.

(3) Duration of Benefits

The majority of the states specify benefits for the duration of the disability. Florida, Idaho, Indiana, Massachusetts, Mississippi, Missouri, New Jersey, New Mexico, South Carolina, Texas, Utah, Virginia and West Virginia have maximum benefit periods ranging from 208 to 700 weeks. Thus, it's conceivable that a transit system could pay claims for many years. Indeed, multiple years of payments are commonplace and were mentioned by the participating transit agencies.

(4) Offsets

In twenty-four states worker's compensation payments are subjected to social security, unemployment insurance and other offsets which hold down payments by employers. The federal Social Security Disability program pays benefits to disabled workers under 65 whose disability is expected to last at least 12 months or result in death. The average monthly benefit awarded in 1987 was $517. Combined Social Security Disability and worker's compensation benefits may not exceed 80 percent of average current earnings prior to disability. Concern over Social Security costs prompted the requirement in the Omnibus Budget Reconciliation Act of 1981 that Social Security disability benefits supplement worker's compensation unless state law provided for a reverse offset before February 18, 1981.

(5) Waiting Periods

State laws provide that a waiting period must elapse during which income payments are not payable. These periods range from three to seven days, with 25 states having three-day periods and 21 having seven-day waiting periods. Some employers waive the waiting periods. One transit agency reports that when the waiting period waiver was removed from the union contract, the number of claims filed was reduced.

(6) Medical Schedules

Most states have statutory schedules for the payment of fixed sums for injuries involving the loss or loss of use of specific body parts. Compensation for temporary disability is usually allowed in addition to these payments. The range of maximum benefit payments for scheduled payments is wide. Loss of a foot could result in a maximum payment of $124,428 in Maryland; the same injury would be worth only $9,000 in

North Dakota. In the agencies studied, the same wide discrepancies exist. In Oregon, for example, the loss of an eye could result in a maximum payment of $14,500; the same injury could be reimbursed for as much as $148,900 in Connecticut.

(7) Choice of Physician

Employees have the prerogative to choose their own physicians for medical treatment in many states. Employers in these cases have no influence over the provider, making it difficult to influence appropriate treatment. In 22 states workers can make the initial choice of a physician; in three states and in the District of Columbia they can select from a list prepared by the state agency; in three others they may select from a list maintained by the employer. The employer makes the selection in 12 states. In seven of these states the selection may be changed by the state agency and in three others the employee has free choice after periods specified in the law.

(8) Rehabilitation

All states make provision for physical and vocational rehabilitation, although there is no statutory provision in the worker's compensation laws for vocational rehabilitation in Indiana, Missouri, Pennsylvania and Wyoming. In some states, physical rehabilitation provisions are covered under medical benefits. In California, rehabilitation costs grew at an annual rate of 41 percent from 1980-1984. Seventeen states now require workers to accept physical and vocational rehabilitation when offered. Twelve others have provisions requiring employees to accept physical rehabilitation and seven require workers to accept preferred vocational rehabilitation programs. Penalties for not accepting rehabilitation usually result in the suspension of compensation benefits.

11.1.4 Administration of Worker's Compensation Laws

Worker's compensation laws in the majority of states are administered through its court systems, a special commission or board or a combination of both. There is a wide variance in the administration of worker's compensation laws by states. There are major differences in the allowable attorney's fees, details of claims filing and settlement, reporting requirements, administration expenses and appeal provisions. All are dictated by state statutes. In some states claimants are entitled to benefits unless the employer proves otherwise; there is a presumption of eligibility in all but the most flagrantly fraudulent cases. There is little a transit agency can do to restrict the number of allowable claims in this situation.

11.1.5 Other Laws That Affect Worker's Compensation Costs

Other laws or regulations can affect the transit employer's costs for worker's compensation:

- In some states with no-fault insurance laws, a bus driver who is injured in an accident is entitled to a percentage of his salary and money for household expenses in addition to the benefits received under worker's compensation. This places an additional burden on the transit agencies in these states.
- Federal and state income tax law as presently written exempts worker's compensation payments from taxation. In some cases, employees' spendable income under worker's compensation can be almost as much or more than spendable income from wages.
- It is a common practice to exempt worker's compensation benefit payments from all wage garnishments, assessments, union dues, and contributory group insurances. To some workers, this could make worker's compensation more attractive and encourage extending their time away from work.
- Several states now allow garnishment of compensation benefits for the support of dependent children of worker's compensation recipients. This is a new development and indicates that state legislatures are taking a closer look at some of the elements of worker's compensation that had formerly been considered inviolate.

11.2 IMPACT OF STATE LAWS ON AUTOMOBILE/BUS LIABILITY

The severity of transit system losses resulting from bus accidents is affected by state law. Exhibit 11-1 shows features of state laws which impact claims. As with laws concerning worker's compensation, auto/bus liability statutes differ widely among states. There appears also to be wide differences in the individual impacts of these statutes, depending on the interpretations of the laws and on regional differences in litigious behavior.

11.2.1 Major Features of Auto/Bus Liability Statutes.

The major features of auto/bus liability statutes impacting the 17 transit agencies studied are statutory limitations resulting from sovereign immunity, no-fault insurance and provisions regarding comparative negligence, modified comparative negligence and contributory negligence.

(1) Statutory Limitations

Seven of the 17 agencies assessed are in states with statutory limitations on negligence claims. These limitations range from $100,000 to $250,000 per person and from $200,000 to $800,000 per accident. The limits are not necessarily reached, but they can be exceeded. The Memphis Area Transit Authority, for example, hasn't paid $100,000 for an accident in 21 years. But, in Broward County, Florida, if a jury awards a claimant an amount in excess of the statutory limit, the only way the agency would have to pay more would be through a "claims bill" brought before the state legislature. The claim would have to go through the House and Senate, where the majority rules. In some cases injured employees are treated as agents of the district. They cannot usually sue for more than worker's compensation benefits.

(2) No-Fault Insurance

Colorado, Connecticut, Georgia and Michigan have no-fault insurance. In Connecticut there are no set limits on claims. In the other three states bodily injury claims can range from a total of $5,000 in Georgia to three years of covered wage loss (85 per cent), unlimited medical expenses and 20 days of help with household services in Michigan.

(3) Uninsured Motorist Coverage

An accident involving an uninsured motorist can add to a transit agency's liability. In Connecticut and elsewhere there is a legal liability placed on commercial carriers for passenger injuries sustained in an accident caused by an uninsured motorist.

(4) Other Features

Claims at the three transit agencies in this study located in California, and other agencies in Illinois, Wisconsin and Virginia are governed by the following features of statutes:

- Comparative Negligence. In California, agencies now are responsible only to the extent of their liability. Formerly there was a deep pocket provision that required agencies to be responsible for the whole amount in certain cases, no matter how small the percentage of fault.

- Modified Comparative Negligence. In Illinois and Wisconsin, the agency can collect on claims only up to 50 percent of negligability. In cases where the agency

EXHIBIT 11-1
FACTORS AFFECTING AUTOMOBILE/BUS LIABILITY CLAIMS
States with Statutory Limits on Liability

STATES	TRANSIT AGENCIES	AUTOMOBILE/BUS LIABILITY STATUTES
Colorado	Denver RTD	• Limits of $150,000 per person, $400,000 per accident • $250,000 cap on non-economic losses • Property liability dependent on owner's actual knowledge of defective property • Also has no-fault personal injury protection (PIP) benefits - Pedestrians can collect one-year's salary, $50,000 medical, $50,000 rehabilitation.
Tennessee	Memphis	• Limits of $100,000 per person, $200,000 per accident • Tennessee has a contributory negligence statute, but it is seldom invoked.
Florida	Broward County	• Limits of $100,000 per person, $200,000 per accident • If a jury awards a claimant in excess of the limit, the only way the agency would have to pay more would be through a "claims bill." The claimant would have to bring the claim to the state legislature.

EXHIBIT 11-1
FACTORS AFFECTING AUTOMOBILE/BUS LIABILITY CLAIMS (CONTINUED)
States with Statutory Limits on Liability

STATES	TRANSIT AGENCIES	AUTOMOBILE/BUS LIABILITY STATUTES
Oregon	Tri-Met	· Limits of $100,000 per person, $300,000 per accident, $50,000 property cap · All employees are treated as agents of the district; they can only collect worker's compensation benefits · $500,000 cap on non-economic damages
Texas	Dallas	· Limits of $100,000 per person, $300,000 per accident · No "claims bill."
Ohio	Cleveland RTA	· Limit of $250,000 per claim, except there is no cap for "wrongful death." · If an employee is injured, he can only claim worker's compensation unless the employer is wantonly or willfully at fault.
Missouri	St. Louis	· Limits of $100,000 per person, $800,000 per accident · Immunity and statutory limits apply only to the agency. The driver can be sued.

EXHIBIT 11-1
FACTORS AFFECTING AUTOMOBILE/BUS LIABILITY CLAIMS (CONTINUED)
States with No Statutory Limits on Liability

STATES	TRANSIT AGENCIES	AUTOMOBILE/BUS LIABILITY STATUTES
Connecticut	Connecticut Transit	No-Fault Insurance - no limits
Georgia	MARTA	No-Fault Insurance • Bodily injury total of $5,000 ($2,500 for medical expenses) - If medical is more than $2,500, or total more than $5,000, liability claim must be filed. - Wage hours - 85% of wages ($200/wk maximum) - Household services - $20 per day • Property damage - if other party is at fault, he is sued.

EXHIBIT 11-1
FACTORS AFFECTING AUTOMOBILE/BUS LIABILITY CLAIMS (CONTINUED)
States with No Statutory Limits on Liability

STATES	TRANSIT AGENCIES	AUTOMOBILE/BUS LIABILITY STATUTES
Michigan	SEMTA and Detroit DOT	No-Fault Insurance . Claim has 3-year file . Bodily injury - Wage loss - 85% of wages ($2430/month maximum, 1986) - unlimited medical (but requires exams by independent physician) - Household services - 20 days . Property Damage - each party goes to own insurer.
California	MUNI, Santa Clara County and Orange County	Comparative Negligence . Payment is based only on the percentage of negligence. This is a change from a former "deep pocket" provision under which, in certain circumstances, the agency might have been only 1% responsible but would have to assume 100% liability.

EXHIBIT 11-1
FACTORS AFFECTING AUTOMOBILE/BUS LIABILITY CLAIMS (CONTINUED)
States with No Statutory Limits on Liability

STATES	TRANSIT AGENCIES	AUTOMOBILE/BUS LIABILITY STATUTES
Illinois	PACE and St. Louis	Modified Comparative Negligence • If one party is more than 50% at fault, he can not sue the second party. • Trying now to legislate caps on punitive damages and collateral sources rule.
Wisconsin	Milwaukee County	Modified Comparative Negligence • If one party is 1% negligent, he still must pay if the other party has no insurance or if no one else is negligent.
Virginia	Richmond	Contributory Negligence • If the plaintiff contributes in any way to an accident, he cannot recover damages • $350,000 cap in punitive damages.

is the only party negligible or where the other party has no insurance, the agency is liable for all damages.

- Contributory Negligence. In Virginia, a plaintiff who is at fault to any extent for an injury is barred from recovering damages.

11.2.2 Tort Reforms Affecting Automobile/Bus Liability

Much work was done in State Legislatures during 1986-1987 in tort reform. Exhibit 10-2 shows which of the states concerned in this study were affected by tort reforms. Definitions of technical language are also provided in the exhibit. Selected aspects of these reforms are discussed below:

- In Illinois, joint and several liability has been abolished for low-fault defendants (25 percent of fault or less). It is completely abolished for municipalities in Michigan.

- Oregon and Colorado have caps on non-economic damages. In Colorado, the cap is $250,000; $500,000 when the court finds "clear and convincing evidence". The cap is $500,000 in Oregon.

- In Florida and Ohio there is a mandatory offset for payments from collateral sources. In Illinois, only collateral sources for medical benefits over $25,000 can be offset.

- Contingency fees are subject to sliding scale percentage limits in Connecticut.

- Texas limits the period during which prejudgment interest may accrue if the defendant has made an offer to settle.

- In Florida, the punitive award may not exceed three times the compensatories unless evidence is "clear and convincing." Six percent of the award goes to the state's General Fund or Medical Assistance Trust Fund.

- Provisions for periodic payments are mandated in Michigan and Florida if economic damages exceed $250,000; in Connecticut they are mandated if they exceed $200,000.

- In Georgia, sanction for frivolous suit is equal to payment of double amounts of costs and attorney fees.

EXHIBIT 11-2
TORT REFORMS AFFECTING TRANSIT AGENCIES STUDIED
(1986 - 1987)

Changes in Joint and Several Liability	Non-Economic Caps	Changes in Collateral Source Rule	Limits on Contingency Fees	Limits on Pre-judgement Interests	Limits on Punitive Damages	Provisions for Periodic Payments	Penalties for Frivolous Suits
CA MI CO MO CT OH FL OR IL TX GA	CO OR	CO MI CT MO FL OH GA OR IL	CT IL MI	MI TX	CA MO CO OH FL OR GA VA IL	CT FL MI OH	CT GA IL OH OR VA

Definitions:

1.	Joint and Several Liability	Each defendant is liable for the entire award even if only slightly responsible. If one has no money, the others must pay his share.
2.	Non-Economic Cap	A cap on the monies awarded by juries to the plaintiff for such expenses as pain and suffering and mental anguish.
3.	Collateral Sources	Payment already received from other sources. Under this rule, the judge and jury can not be told whether the plaintiff's medical expenses, wages or other losses have already been paid.
4.	Contingency Fees	Attorneys' fees based on the percentage of money awarded to the client.
5.	Punitive Damages	Monies awarded by juries to punish defendants for willful and malicious actions.

Source: American Tort Reform Association

11.2.3 Impacts of Statutes on Transit Agencies

The following examples illustrate some situations particular to transit agencies assessed in this study.

- Employees in Denver RTD had earlier been refusing to claim worker's compensation benefits and instead were filing for Personal Injury Protection (PIP) benefits because they could get more money under PIP. The law has now been changed. Workers now file first for worker's compensation, then PIP. PIP will provide benefits to pay for household help. Also, employees in RTD's light duty program can receive two-thirds of the difference between what they were making before the injury and their present income while they are out on injury.

- The Bi-State Development Agency operates in both Missouri and Illinois. Missouri has statutory limits on liability claims; Illinois does not. Doing business in the two states requires working with two entirely different sets of laws.

- Injured operators at Connecticut Transit can sue other parties in an accident while they are receiving worker's compensation benefits. In the event they win the suit, the agency can put a lien against the award to recover the amounts paid out for worker's compensation.

* * * * *

In summary, both worker's compensation and auto/bus liability claims are severely influenced by state laws. Worker's compensation benefits are controlled by state laws which specify almost every aspect of claims and claim management. Auto/bus liability claims are impacted by state laws governing limits on claims and various conditions affecting the claims process. There are differences in the way states legislate claims and benefits. As would be expected, states where unions have strength tend to legislate higher worker's compensation benefits. More conservative states tend to legislate lower benefits and more statutes limiting the amount and severity of auto/bus liability claims. Only one transit agency in this study reported lobbying efforts to try to influence the legislation process in these two areas. In view of the escalating cost of worker's compensation and auto/bus liability claims, an effort at lobbying for containing these costs may be a strategy transit agencies will want to consider in the future.

APPENDIX A

NOTEWORTHY TRANSIT LOSS CONTROL ACTIVITIES

Many of the 17 transit agencies in this study have impressive safety programs. Some of these are due to the dedication of the staff and the importance placed on safety by top management; others are due to innovative and unique approaches to safety issues. A number of these noteworthy programs are described below.

SAFETY POLICY

- Milwaukee County has a bound, easily referenced safety manual which is issued to all employees. It deals with issues ranging from prevention of accidents to first aid to proper use of tools and machines. It was first published in 1981. The purpose is to "prevent accidents to employees and the public."
- Dallas has developed a formal policy which clearly indicates the strong emphasis on and commitment to safety by top management.
- Richmond has a strong safety incentive program for mechanics with gifts ranging from tool sets to golf clubs.

OPERATOR SAFETY

- Connecticut Transit night routes are scheduled around "pulse points" where all buses meet and leave at the same time after 7:15 p.m. This improves driver security and safety.
- Broward County Transit has reduced assaults and injuries to its operators by removing their responsibility for fare enforcement. A passenger who enters the bus without paying is asked once for the fare; the driver is not required to enforce fare collection.

VEHICLE SAFETY

- PACE has added decelerating yellow flashers to the rear of each bus to warn nearby motorists that the bus is changing speed. PACE also made a fleetwide bus color change from black to white to increase visibility of the buses to other motorists.

SAFETY MONITORING

- Both SEMTA* and Detroit DOT participate in the Southeast Michigan Council of Governments (SEMCOG) Transit Accident/Crime data program. The program documents detailed information on accidents, incidents and injuries. Reports provide the transit agencies with comprehensive assessments of the conditions surrounding individual accidents.
- Denver RTD evaluates safety program effectiveness by determining what actions to take when trends are spotted (i.e., safety goggles to protect eyes, well back programs and mechanic safety incentive programs).
- SEMTA and the local police cooperate in a "Coach Stop Crime System" which brings more police into high crime area bus stops. SEMTA also performs periodic monitoring of drivers licenses to identify any personal DWI points, violations or tickets.
- Orange County has an integrated program of on-going and planned safety projects. This plan is an attempt to integrate hazard controls for operators and mechanics into the day-to-day operations of the agency in order to reduce worker's compensation claims and losses.
- Tri-Met has a committee assigned to examine road conditions along bus routes to identify potential hazards which may lead to bus accidents or industrial injuries and make recommendations for any needed repairs.

HIRING GOALS AND MONITORING

- Broward County has established a hiring goal to employ individuals who will minimize the transit agency's liability.
- The director of human resources at MARTA is attempting to correlate the results of hiring tests with job performance.

---

* SEMTA was reorganized as the Suburban Mobility Authority for Regional Transportation (SMART) effective January 17, 1989.

PRE-EMPLOYMENT SCREENING

- Tri-Met has developed specific profiles of the physical demands of operator and mechanic positions. These profiles are used to assist physical examiners in the screening of employee candidates.

- St. Louis has developed comprehensive interview guides for both bus operators and mechanics. The operators guide focuses on evaluating the applicant's attitudinal and awareness qualities (e.g., integrity, courtesy, personality, safety), while the mechanic guide focuses on testing the applicant's technical knowledge of bus equipment.

- Connecticut Transit utilizes an authorization release form to facilitate the collection of references on applicants. The release form authorizes Connecticut Transit to collect data regarding employment, credit, education and criminal record history.

OPERATOR TRAINING COURSES

- Broward County is using a new transit bus simulator in its operator training classes. The simulator is an improvement over old simulators based on truck cabs.

- The Cleveland RTA has a dedicated off-road training course where drivers can practice their driving skills away from road traffic.

- Detroit DOT is providing stress tolerance classes.

- Orange County is providing an automatic refresher course to operators one year after their last accident or after a change of routes. A consultant is being hired to evaluate training program effectiveness.

- The Cleveland RTA provides an annual winter refresher training course for operators. This SNO-PRO program reminds drivers each year of the dangers of bad weather driving.

- Muni is using graphs in monthly reports to measure actual training department performance versus planned performance.

- SEMTA has developed training components on proper use of a fire extinguisher. SEMTA has also developed training components on how to avoid slips, trips and falls and how to avoid back injuries.

INDUSTRIAL INJURY RECORDKEEPING

- MARTA has a strong recordkeeping system. Injuries are monitored for cause and frequency. Claims are analyzed by type. Monthly accident analyses are also prepared.

USE OF PHYSICIANS

- St. Louis uses the same physician for pre-employment physicals and for checking job injuries. This helps to control worker's compensation claims and costs.
- SEMTA requires independent medical opinions in cases where the employee doesn't wish to return to work within the recommended time period. If the employee does not return to work in conformance with the independent physician's recommendation, workers compensation benefits cease.

FITNESS PROGRAMS/PREEXISTING CONDITIONS

- Santa Clara County has recently implemented (September 1988) a Health Improvement Program to increase health education awareness. One aspect of the program provides for visiting nurses to meet with employees to discuss their general health, exercise, diet and other health related matters.
- Detroit DOT has access to the Mayor's physical fitness program which supplies a mobile unit to check blood pressure, body fat, grip and other fitness measures. A city employee program offers volleyball, bowling, golf, tennis, softball and other activities. All stress claims in Detroit are automatically disputed. A union contract provision contains a clause for the non-allowance of pre-existing conditions in worker's compensation claims.
- Santa Clara County has a Health Improvement Coordinator who visits the workers at home after an injury. The health improvement coordinator assists in the solution of problems and in identifying rehabilitation opportunities for the worker.

WORKER'S COMPENSATION CLAIMS TRACKING

- Memphis closely tracks all worker's compensation claims. An internal program for tightening up on worker's compensation was started in 1985. Department heads meet weekly and all claims are closely scrutinized.

- Dallas's claims handling procedures are well-defined. A worker's compensation coordinator tracks claims and may visit claims recipients at home or in the hospital. Claims recipients must be examined by company approved physicians on request. A wellness program offers prescreenings, fitness and recreation activities. The cost is $75 per year to employees and can be a payroll deduction. Dallas also has two loss containment and work enhancement committees.

CROSS-DEPARTMENTAL APPROACH TO WORKER'S COMPENSATION

- Tri-Met has established a cross-departmental committee to work on the problem of reducing worker's compensation claims. The compensation claims coordinator and station manager conduct home visits to injured employees to discuss options for modified work programs and training. The claims coordinator prepares worker's compensation summary reports and an internal newsletter to keep the agency informed of on-going activities affecting worker's compensation.

- Tri-Met also has a fitness center for employees and their families offering comprehensive services and a well back program.

- SEMTA has created a Safety Task Force, consisting of staff from the Operations, Personnel and Finance departments to address employee safety, training, property conservation and other issues on an Authority-wide basis. The main objective of the Task Force is the reduction of employee injuries, vehicle accidents and exposure to property losses by implementation of proactive safety activities.

MULTI-PROGRAM APPROACH TO WORKER'S COMPENSATION

Orange County has instituted a wide range of programs to address worker's compensation costs. Along with detailed recordkeeping and a claims analysis program, the agency offers the following activities:

- Different wellness/fitness programs for operators and mechanics providing clinical and non-clinical assessments with remedial programs.

- Well back classes which provide back supports to operators attending classes.

- A written "Temporary Alternative Work Program" that specifies scope and duration, alternative tasks, job monitor responsibilities, procedures, forms, compensation benefits and information packets for employees.

- Activities to increase contracted physician awareness of physical requirements for key positions. Video tapes of work stations and employees "in action" and invitations for doctors to ride and/or drive buses, together with discussions of physical requirements necessary to perform jobs.
- Investigation program to detect, contest and defeat frivolous and fraudulent claims.

Orange County has also conducted a transit agency survey to learn what other carriers are doing with regard to job modification, pre-employment physicals and frivolous and fraudulent claim discouragement. A group of additional loss control programs are in place and are expected to be implemented in the near future.

* * * * *

This appendix has reviewed some of the exceptional loss control activities practiced at the agencies included in this study. A wide range of innovative program activities are being implemented by transit agencies in an attempt to hold down the costs of bus accidents and industrial injuries.

APPENDIX B

PARTICIPANTS IN BUS TRANSIT SAFETY/LOSS CONTROL STUDY

TRANSIT SYSTEM	GENERAL MANAGER	PERSON INTERVIEWED	RESPONSIBILITY
CONNECTICUT TRANSIT HARTFORD, CONNECTICUT (203) 522-8101	ROBERT D. LORAH	DAVID LEE	DIRECTOR OF ADMINISTRATION
		ROBERT LORAH	GENERAL MANAGER
		FRED WEBER	MANAGER OF EQUIPMENT AND MAINTENANCE
		ANDY KONEFAL	TRAINING SUPERVISOR
		GEORGE HALL	SENIOR SAFETY REPRESENTATIVE
		FRED TANGUAY	INSURANCE AGENT
		DAVID SCLAR	HUMAN RESOURCES OFFICIER
		RAY CLARK	DIVISION TRANSPORTATION MANAGER
SOUTHEASTERN MICHIGAN TRANSPORTATION AUTHORITY DETROIT, MICHIGAN (313) 256-8600	ALBERT A. MARTIN	ROSE MICHEL	RISK MANAGER AND MANAGER OF ADMINISTRATIVE SERVICES
		TOM JONES	DIRECTOR OF OPERATIONS
		WALTER REDMOND	MANAGER OF OPERATIONS ADMINISTRATION
		BARBARA MARSHALL	OPERATIONS ASSISTANT
		MARY JO LAPORTE	DIRECTOR, HUMAN RESOURCES AND PERSONNEL ADMINISTRATION
		DELORES JENKINS	MANAGER, EMPLOYMENT AND TRAINING
		PARTICIA MINOTT	TRAINING SPECIALIST
		JOHN SAJOVEC	DIRECTOR OF PLANNING (SERVICES PROFILE)
MILWAUKEE COUNTY TRANSIT AUTHORITY MILWAUKEE, WISCONSIN (414) 278-4835	THOMAS KUJAWA (PRESIDENT)	GERALD SCHWERM	DIRECTOR OF TRANSPORTATION
		DANIEL A. KRIER	DIRECTOR OF CLAIMS
		MICHAEL E. VEBBER	ASSN'T DIRECTOR OF OPERATIONS
		KENNETH WARREN	VP AND DIRECTOR OF OPERATIONS
		HOWARD LIEBSCHER	DIRECTOR OF HUMAN RESOURCES
		TOM LABS	SUPERVISOR OF TRANSPORTATION OPERATIONS
		RALPH MALEE	MAINTENANCE DIRECTOR
		GERALD SCHWERM	DIRECTOR OF PUBLIC WORKS, MILWAUKEE COUNTY
GREATER CLEVELAND REGIONAL TRANSIT AUTHORITY CLEVELAND, OHIO (216) 566-5100	RONALD TOBER	MR. RUSSEL T. ADRINE	OVERVIEW OF LEGAL DIVISION
		MR. NEHR	OVERVIEW OF FINANCE DIVISION
		PHIL GARY	OVERVIEW OF BUS OPERATIONS
		BARRY BARKER	ASSISTANT GEN. MANAGER, MKTG & MGMT
		MR. CLARK AND MR. BARTKIEWICZ	DETAILS OF BUS OPERATIONS AND MAINTENANCE
		MR. JAMES	DETAILS OF HIRING AND DRUG/ALCOHOL POLICY
		MR. FIFE	DETAILS OF CLAIMS
		TOM RABE	DETAILS OF SAFETY
		MS. LAWRENCE	DETAILS OF TRAINING
		MS. BAKR	DETAILS OF FINANCE
		MR. COVILL	DETAILS OF PROCUREMENT
		MR. BROWNE	ASSISTANT GENERAL MANAGER

APPENDIX B

PARTICIPANTS IN BUS TRANSIT SAFETY/LOSS CONTROL STUDY

TRANSIT SYSTEM	GENERAL MANAGER	PERSON INTERVIEWED	RESPONSIBILITY
PACE ARLINGTON HEIGHTS, IL (312) 364-7223	JOSEPH DIJOHN (EXECUTIVE DIRECTOR)	FRANK TROMBETTA	HUMAN RESOURCES MANAGER
		PATTI SANCHES	HUMAN RESOURCES SPECIALIST (HIRING)
		MELINDA METZGER	DEPARTMENT MANAGER OF BUS OPERATIONS AND MAINTENANCE
		JOHN BRABAND	OPERATIONS DIVISION MANAGER
		DUANE CHRISTENSEN	BUS MAINTENANCE DIVISION MANAGER
		BILL RUESCHAW	SAFETY MANAGER
		PANSY HEGER	RISK MANAGER
		LARRY BUSH	ADMIN DIVISION MANAGER
		ROSEMARIE TRUPPA	CAPITAL PLANNING AND GRANT ADMIN. DIVISION MANAGER
		GERRI SCOTT	MANAGER OF INTERGOVERNMENTAL AFFAIRS
		MIKE BOHM	SUPERVISOR OF DATA COORDINATION AND ANALYSIS
		ROMAN ROMATOWSKI	BUDGET PLANNING AND ANALYSIS
		JIM OPAKA	INSURANCE SPECIALIST
		RICH PULLIA	DIRECTOR OF SAFETY, WEST DIVISION
		ERNIE FERGUSON	SUPERINTENDENT OF MAINTENANCE, WEST
		BRUCE WATSON	SUPERINTENDENT OF TRANSPORTATION, WEST
METROPOLITAN ATLANTA RAPID TRANSIT AUTHORITY ATLANTA, GEORGIA (404) 848-5000	KENNETH M. GREGOR	SUSAN BROWN	UMTA COORDINATOR
		CARROLL OLSON	ASSN'T GENERAL MANAGER OF FINANCE
		DOUG CRAVEN	RISK MANAGER
		HARRY HOWER	MANAGER OF INSURANCE
		CHARLES TODD	CLAIMS MANAGER
		KEN RABREN	DIRECTOR OF BUS TRANSPORTATION
		HOMER CLEMMONS	MANAGER OF SAFETY AND TRAINING
		ED MANNING	ASSN'T DIRECTOR OF TRANSPORTATION
		TED STONE	BUS MAINTENANCE COORDINATOR /SAFETY AND TRAINING
		WHIT PERRIN	DIRECTOR OF PERSONNEL
		JIM HOBSON	CLAIMS SUPERVISOR
		DENNIS BUTTIMER	EAP
SANTA CLARA COUNTY TRANSPORTATION AGENCY SAN JOSE, CA (408) 299-2884	JAMES E. READING (DIRECTOR)	RON CERONE	ASSISTANT GENERAL MANAGER
		MIKE ARO	SERVICE DEVELOPMENT MANAGER
		RANDI POWERS	TRANSPORTATION MANAGER, BUS OPS
		KIM STONE	TRAINING AND SAFETY SUPERINTENDENT
		MIKE DEARCOT	SAFETY COORDINATOR
		MIKE RANCER	BUDGET AND OPERATIONS ANALYSIS MANAGER
		DON BLACKHURST	INSURANCE/RISK MANAGER
		WES VAN OSDOL	LOSS PREVENTION SPECIALIST
		MIKE HUBBELL	MAINTENANCE
		CHRISTINE BELL-JONES	MECHANIC HIRING

APPENDIX B

PARTICIPANTS IN BUS TRANSIT SAFETY/LOSS CONTROL STUDY

TRANSIT SYSTEM	GENERAL MANAGER	PERSON INTERVIEWED	RESPONSIBILITY
SANTA CLARA CONT'D		GREG OTAZUA	DEPUTY DIRECTOR (HRD)
		AMBROSE DELFINO	HRD MANAGER
		TIM ELLENBERGER	HEALTH IMPROVEMENT PROGRAM
		DONNA MIHAN	FINANCE
		JIM UNITES	EXECUTIVE ASSISTANT
		THOMAS LEE	TRANSIT SUPERINTENDENT
SAN FRANSISCO MUNICIPAL RAILWAY SAN FRANSISCO,CA (415) 923-6212	WILLIAM G. STEAD	LEE LARGE	SUPERINTENDENT OF MAINTENANCE KIRKLAND DIVISION
		PAUL CZECHOWICZ	SAFETY, OPERATOR TRAINING, ADMIN
		DEBORAH ROHRER	DIRECTOR, BUREAU OF CLAIMS
		JOHN BOTHWELL	WORKER'S COMPENSATION COORDINATOR
		PAUL TOLLIVER	DIRECTOR OF OPERATIONS
		WOODY HUNTER	EAP CITY-WIDE PROGRAM
		HIAWATHA WASHINGTON	DRIVER TRAINING
		BOB OLSEN	DIRECTOR OF MAINTENANCE TRAINING
		KATHLEEN KELLY	FINANCE
		KEITH GRAND	CITY RISK MANAGER
		GUY WRIGHT	SAFETY COORDINATOR
		JOHNNY STEIN	GENERAL SUPERINTENDENT OF SURFACE TRANSPORTATION
		PHIL ADAMS	MAINTENANCE MANAGER
		MS. JO IVESTER	ADMINISTRATIVE SERVICES MANAGER
		PATRICIA CARDONA	ASSN'T GENERAL CLAIMS AGENT
		RON HUDENSKI	STATISTICS
TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON PORTLAND,OREGON (503) 238-4915	JAMES E. COWEN	VIRGIL WELLBORN	RISK MANAGER
		JENNIFER BIGGS	WORKER'S COMPENSATION CLAIMS MANAGER
		HARRY SAPORTA	SAFETY MANAGER
		DONNA OSBURN AND KEN JENSEN	OPERATOR TRAINING
		MIKE GROVE	MECHANIC TRAINING SUPERVISOR
		CAROLYN NELSON	DIRECTOR OF PERSONNEL
		CAROL GREY	EAP PROGRAM
		GARY BRENTANO	DIRECTOR OF MAINTENANCE
		CLYDE EARL	DIRECTOR OF TRANSPORTATION
		RAY LEE	LIGHT DUTY COORDINATOR
		DAVID AUXIER	FINANCE DIRECTOR
		JOYCE LANG	MANAGER OF ACCOUNTING
		ROBERT SEELY	TRAINING MANAGER
ORANGE COUNTY TRANSIT DISTRICT GARDEN GROVE,CA (714) 638-9000	JAMES P. REICHART	CALVIN MEEKS	DIRECTOR OF FINANCE AND ADMIN.
		ANN NEESON	MANAGER OF EMPLOYEE/LABOR RELATIONS
		JACKIE DUNCAN	SUPERVISOR OF SAFETY AND BENEFITS
		RANDALL SELLERS	MANAGER OF RISK MANAGEMENT

APPENDIX B

PARTICIPANTS IN BUS TRANSIT SAFETY/LOSS CONTROL STUDY

TRANSIT SYSTEM	GENERAL MANAGER	PERSON INTERVIEWED	RESPONSIBILITY
ORANGE COUNTY CONT'D		JOAN LAROSA	MANAGER OF EMPLOYMENT AND TRAINING DEVELOPMENT
		JOHN CATOE	MANAGER OF TRANSPORTATION
		TODD LEE	MANAGER OF FINANCIAL PLANNING AND ANALYSIS
		ART BUSSE	MANAGER OF ACCOUNTING/BUDGETING
		BOB HENDRICK	MECHANIC TRAINING
		BOB MITCHELL	MANAGER OF MAINTENANCE TRAINING
		TED GRANDKE	SUPERVISOR OF OPERATOR INSTRUCTION
		STEVE WALSH	TRANSIT INCIDENT COORDINATOR
		EDMUND BUCKLEY	MANAGER OF SERVICE DEVELOPMENT
		JAMES P. REICHART	GENERAL MANAGER
GREATER RICHMOND TRANSIT AUTHORITY RICHMOND,VIRGINIA (804) 358-3871	HENRY C. CHURCH	THOMAS BELL	RISK MANAGER, CLAIMS
		EDNA WILLIAMS	ASSN'T DIRECTOR OF FINANCE
		JEFF CAHOON	DIRECTOR OF HUMAN RESOURCES
		CHARLES L. REID	SCHEDULING, ROUTES, MAPS
		AL SAUNDERS	DIRECTOR OF TRANSPORTATION
		THOMAS WILLIAMS	DIRECTOR OF MAINTENANCE
REGIONAL TRANSPORTATION DISTRICT DENVER, COLORADO (303) 628-9000	CHESTER (ED) COLBY	JACK KENNEDY	LEGAL COUNSEL
		DON DEAGLE	ATTORNEY
		DAVID BEACOM	SUPERVISOR OF LIABILITY CLAIMS
		ED SWANSON	SUPERVISOR OF WORKER'S COMPENSATION
		MARY DAVIS	DIRECTOR OF ADMINISTRATION
		JANIS NOWLAN	MANAGER OF EMPLOYMENT, TRAINING AND DEVELOPMENT
		BOB GARSIDE	ASSN'T GEN. MANAGER OF BUS OPERATIONS
		ROBERT HOSKINS	SENIOR SAFETY COORDINATOR
		DICK REYNOLDS	SUPERINTENDENT OF TRANSPORTATION
		SCOTT BUHRER	CONTROLLER
		JOHN NUSSBAUMER	DIR. OF SAFETY AND ENVIRON. COMPLIANCE
		GEORGE HERMAN	SUPERINTENDENT OF MAINTENANCE
		JERRY EDDY	GENERAL SUPERINTENDENT OF SCHEDULING AND SUPPORT SERVICES
		LOU FARBER	OPERATIONS ANALYST
		PAT MCGOWAN	SUPERVISOR OF TRANSPORTATION TRAINING
BI-STATE DEVELOPMENT AGENCY SAINT LOUIS,MO (314) 982-1400	RALPH D'ADAMO (EXECUTIVE DIRECTOR)	RAY SHEEHAN	RISK MANAGER
		BARBARA JOHNSTON	DIRECTOR OF PERSONNEL
		GAIL MCGROARTY	MANAGER OF BENEFITS
		JULIETTE DOUGLAS	DEPUTY GENERAL MANAGER OF MGMT PLANNING, BUDGETING AND GRANTS
		TOM BUSSELMAN	RESEARCH ANALYST
		JOHN BELGERI	FACILITY DIRECTOR

APPENDIX B

PARTICIPANTS IN BUS TRANSIT SAFETY/LOSS CONTROL STUDY

TRANSIT SYSTEM	GENERAL MANAGER	PERSON INTERVIEWED	RESPONSIBILITY
BI-STATE CONT'D		LYNN GRUBER	MANAGER OF SAFETY
		CHUCK PRISCU	MECHANIC TRAINING
		JIM MONAHAN	DIRECTOR OF EMPLOYEE DEVELOPMENT AND TRAINING
		HELEN CURREN	MAINTENANCE ADMINISTRATION COORDINATOR
		CARL THIESSEN	MAIN SHOP SUPERINTENDENT
		RONALD SMITH	DAMAGE APPRAISER
DETROIT DEPARTMENT OF TRANSPORTATION DETROIT,MICHIGAN (313) 833-7670	ROBERT C. POLK (DIRECTOR)	ROSE MARIE FORD	SAFETY ADMIN. ASSN'T (PERSONNEL)
		MARSHA MCGILL	CLAIMS ADJUSTER, CITY OF DETROIT
		JESSE HENDERSON	ATTORNEY, CITY OF DETROIT
		JAMES FRYER	SUPERINTENDENT OF TRANSPORTATION OPERATIONS
		JAMES CRAIG	ASSN'T TO SUPER. OF TRANS. OPERATIONS
		GEORGE NOBLES	ASSN'T TO SUPER. OF TRANS. OPERATIONS
		CLEVELAND WILLIAMS	ASSN'T TO SUPER. OF TRANS. OPERATIONS
		CATHERINE SPILLER	ATTENDANCE CONTROL
		YOLANDA BEAN	PERSONNEL OFFICE MANAGER
		AL PATRICK	ASSN'T PERSONNEL DIRECTOR
		DARIUS STEWART	PRINCIPAL ACCOUNTANT
		CHRIS WALTON	SUPERVISOR OF VEHICLE MAINTENANCE
		SANDRA MCASHER	SENIOR PERSONNEL PAYROLL CLERK
		LARRY SHOEUTTLE	ACCOUNTING
		CLARA KINNARD	PERSONNEL DIRECTOR
		MELVIN REYNLODS	TEO INSTRUCTOR
		JAMES MATHIS	TEO INSTRUCTOR
MEMPHIS AREA TRANSIT AUTHORITY MEMPHIS,TENNESSEE (901) 722-7100	FRED M. GILLIAM	RANDALL HUME	DIRECTOR OF SERVICE DEVELOPMENT/ FINANCE
		W. D. FARRAR	DIRECTOR OF MAINTENANCE
		ONITA JAMIESON	EMPLOYEE BENEFITS ADMINISTRATOR
		WILLIAM HUDSON	DIRECTOR OF TRANSPORTATION
		CARY BEANE	DIRECTOR OF HUMAN RESOURCES
		FRANK TOBEY	ASSN'T GENERAL MANAGER
		ED MCBRAYER	PRESIDENT, TRANSIT CLAIMS COMPANY
		RICK CARWILE	MANAGER, TRANSIT CLAIMS COMPANY
DALLAS AREA RAPID TRANSIT DALLAS,TEXAS (214) 748-3278	CHARLES S. ANDERSON (EXECUTIVE DIRECTOR)	MICHAEL SMITH	ASSN'T EXEC DIRECTOR OF OPERATIONS
		REG JONES	DIRECTOR OF MAINTENANCE
		FRANK FAJARADO	DIRECTOR OF PERSONNEL
		THURSTON JONES	PERSONNEL
		OSCAR FLORES	SUPERVISOR OF OPERATOR TRAINING
		JANICE NAPPER	BUDGET ANALYST FOR OPERATORS
		RICHARD JARRETT	DIRECTOR OF QUALITY ASSURANCE

APPENDIX B

PARTICIPANTS IN BUS TRANSIT SAFETY/LOSS CONTROL STUDY

TRANSIT SYSTEM	GENERAL MANAGER	PERSON INTERVIEWED	RESPONSIBILITY
DALLAS CONT'D		AGAPITO LISCANO	SAFETY OFFICIER
		ROBERT REDDING	DIRECTOR OF RISK MANAGEMENT
		DORIS BRIDGES	WORKER'S COMPENSATION
		DAVID ARMIJO	TRANSPORTATION SPECIALIST
		DAVID BATES	INDUSTRIAL LOSS CONTROL COORDINATOR
		JOE HADDOCK	GENERAL FOREMAN
		IRENE DEMERS	MANAGER OF RECRUITING
		JIMMI SANDERS	OPERATOR HIRING
BROWARD COUNTY DIVISION OF MASS TRANSIT POMPANO BEACH, FL (305) 357-8300	JOEL VOLINSKI (DIRECTOR)	BILL SORRELLS	SUPERINTENDENT OF SAFETY/TRAINING
		KEN STEVENS	MANAGER OF OPERATIONS
		BOB ROTH	MANAGER OF FINANCE
		LARRY THOMPSON	MANAGER OF MAINTENANCE
		JOEL VOLINSKI	DIRECTOR
		DOT JONES	RISK MANAGER
		KAREN BARRETT	ASSISTANT TO RISK MANAGER

* INDICATES TELEPHONE INTERVIEW

APPENDIX C

GLOSSARY OF SAFETY, LOSS CONTROL AND RISK MANAGEMENT TERMS

Accident - An unforeseen, unintended event, caused by an unsafe act, an unsafe condition, or a combination of the two.

Accident Frequency - The rate of occurrence of accidents (e.g., the number of accidents per million miles travelled).

Accident Severity - A measurement of the seriousness resulting from accidents.

Bodily Injury Liability - A liability for damages resulting from bodily injury (including death).

Claim - (1) A demand for something due or believed to be due (e.g., an insurance claim), or a demand by an individual or corporation to recover a loss which may come within a policy of insurance or (2) The demands against an insured which are referred to the insurance company for handling on behalf of the insured in accordance with the contract terms.

Claim Reserve - Funds to cover projected costs of a claim in, or subject to, litigation. Reserves are often accrued as liabilities and not funded until the claim is settled.

Comparative Negligence - A form of negligence where a plaintiff whose fault is less than the defendant's may recover a portion of his loss.

Comprehensive General Liability - A liability for damages resulting from business promises or operations, except those resulting from motor vehicles away from the premises and other stated exclusions.

Contractual Liability - A liability assumed, express or implied, under a written contract, (e.g., Under most construction agreements with a municipality, the contractor agrees to "hold the municipality harmless" for any accidents arising out of the job. Contractual Liability Insurance would thus protect the contractor from any loss for which the municipality would be liable in connection with the construction.

Contributory Negligence - A form of negligence where a plantiff who is at fault to any extent is barred from recovering damages.

Coverage - The extent of the insurance afforded under an insurance contract; often used to mean insurance or insurance contract; a general term referring to the extent of protection against unanticipated financial claims or losses.

Exposure - The state of being exposed to the chance of loss; the degree or condition of what is at risk.

Hazard - A condition or situation that causes, increases or influences the extent of a loss.

Incident - An unforeseen event or occurrence which does not necessarily result in injury or property damage.

Insurance - A contract whereby one party undertakes to guarantee another against loss by a contingent event.

Legal Liability - A liability enforceable by law.

Liability - (1) an obligation according to law or equity; a responsibility; the exposure to a certain adverse contingency, or (2) a financial obligation; the probable cost of meeting an obligation.

Liability Insurance - An insurance policy covering loss due to liability covering both damages and expenses connected with alleged or actual liability.

Loss - The basis for a claim for indemnity or damages under the terms of an insurance policy (e.g., any unintentional diminution of quantity, or value of property); a valid claim for recovery under policies of indemnity; in its application to liability policies, the payments made on behalf of the insured.

Loss Control - The revision and organization of the patterns of preventive, productive, and administrative activities to minimize loss.

Losses Incurred - The total losses, paid or unpaid, sustained under a policy or policies.

Losses Paid - The amount of loss for which money has been disbursed.

Loss Reserve - The portion of the assets kept in a readily available form to meet probable claims for the payment of losses which have been incurred but are not yet due.

Personal Injury Coverage - The coverage for libel, slander, false arrest, and invasion of privacy, usually issued as an endorsement to a standard General Liability Policy.

Premises and Operations Liability - A liability for accidental bodily injury or property damage resulting from either a condition on the insured's premises or the insured's operations in progress whether on or away from the insured's premises.

Premium - The sum of money paid for an insurance policy.

Probable Maximum Property Loss - The maximum amount of property loss if sprinklers worked and fire departments responded.

Property Damage Liability Insurance - A liability for damages resulting from injury to another's property.

Reserve - (1) The funds of an insurance company or self-insurance for the purpose of meeting obligations as they fall due or (2) A liability set up for a particular purpose.

Retention - A form of self-insurance in which the insured assumes all losses or those losses up to a specified limit.

Risk - A person or thing insured; uncertainty of the outcome of an event when two or more possibilities exist.

Risk Management - The process of planning, organizing, directing, and controlling the resources and activities of an organization to minimize the adverse effect and cost of accidental losses.

Safety - A system characteristic concerning the ability to prevent or minimize occurrence of property damage and/or injuries or fatalities to personnel who interact with the system in some manner -- passengers, employees, or bystanders.

Self-Insurance - The insuring of oneself by the establishment of cash reserves or high deductibles.

Self-Insured Retention (SIR) - A policy where the insured assumes a reasonable limit of losses.

Tort Reform - Changes in laws governing civil wrongs; employed to mean changes designed to eliminate excessive awards and prevent non-meritorious suits.

Worker's Compensation Insurance - An insurance policy or a self-insured retention which protects an employer against an employee's job-connected injury or death. Worker's compensation is prescribed by laws in most states which stipulate the amount of settlements via a list of scheduled benefits.

APPENDIX D

Revised 02/27/89

STATE CDL COORDINATORS

Diana Kelm
Division of Motor Vehicles
Highway Safety Planning Agency
Dept. of Public Safety
Post Box 20, 450 Whittier St.
Juneau, AK 99802
(907) 465-4345

T. Michael Lewis
Governor's Highway Safety Rep.
Alaska Highwayy Safety
Planning Agency
P.O. Box N
Juneau, AK 99811
(907) 465-4374

Sergeant James A. Byrd
CDL Coordinator
Dept. of Public Safety
P.O. Box 1471
Montgomery, AL 36192
(205) 261-4235

Maj. Robert M. Patterson
Chief, Driver License Division
Department of Public Safety
P.O. Box 1471
Montgomery, AL 36192
(205) 261-4240

Mike Munns, Administrator
Office of Driver Services
P.O. Box 1272
Little Rock, AR 72203
(501) 682-7060

Larry Ellis
Group Mgr. Title/Registration
Group
Motor Vehicle Division
P.O. Box 2100
Phoenix, AZ 85001
(602) 255-7427

Carole Waggoner
Chief Program Policy Unit
Department of Motor Vehicles
P.O. Box 932328
Sacramento, CA 95818
(916) 732-0623

Dan Sinawski
Commercial Driver Licensing
Administrator
Motor Vehicle Division
516 Acoma Street
Denver, CO 80204-5195
(303) 620-4101

John L. O'Connell
Acting Director, D.L.
Department of Motor Vehicles
60 State Street
Wethersfield, CT 06109-1896
(203) 566-2770

Peggy Tadej
CDL Coordinator
Bureau of Motor Vehicle Svs.
301 "C" Street, NW
Washington, DC 20001
(202) 727-5383

Robert J. Voshell
Director
Division of Motor Vehicles
P.O. Box 698
Dover, DE 19903
(302) 736-4421

Revised 02/27/89

STATE CDL COORDINATORS

James S. Rowell
Dept. of Highway Safety
& Motor Vehicles,
Div. of Driver Licenses, Room A40
Neil Kirkmam Building
2900 Appalachee Parkway
Tallahassee, FL 32301
(904) 487-4558

C.D. Mason
Georgia State Patrol
P.O. Box 1456
Atlanta, GA 30371
(404) 624-7480

Lawrence Hao, Administrator
Motor Vehicle Safety Office
79 S. Nimitz Highway
Honolulu, HI 96813
(808) 548-5756

Edward Y. Hirata
Director
Department of Transportation
869 Punchbowl St.
Honolulu, HI 96813
(808) 548-5756

Alton Chrystal
Director
Office of Driver Services
Lucas State Office Building
Des Moines, IA 50319
(515) 281-5153

Richard Holloran
CDL Coordinator
Transportation Department
P.O. Box 7129
3311 West State
Boise, ID 83703-1129
(208) 334-8744

D.L. Kraemer, Chief
Motor Vehicle Bureau
P.O. Box 7129
Boise, ID 83707-1129
(208) 334-4804

Tim R. Blanco - Division Admin.
Project Manager - CDL
2701 S. Dirksen Parkway
Springfield, IL 62723
(217) 785-7447

Lou Lowder
Highway Safety Advisor
Driver Services Department
2701 S. Dirksen Parkway
Springfield, IL 62723
(217) 785-1433

George C. Lee
State Coordinator/CDL
Bureau of Motor Vehicles
100 North Senate Avenue
Indianapolis, IN 46204
(317) 232-7295

John W. Smith, Admin.
Driver License/Control
Division of Motor Vehicles
State Office Building
Topeka, KS 66626-0001
(913) 296-3671

Martha R. Gonzales
Kansas Dept. of Revenue
Planning and Research, 2nd Fl.
Docking State Office Bldg.
Topeka, KS 66612-1588

Revised 02/27/89

STATE CDL COORDINATORS

Joe Dawson
Director
Driver Licensing
2nd Floor State Office Bldg.
Frankfort, KY 40622
(502) 564-7731

Gene Peter
Deputy Commissioner
Kentucky State Police
919 Versailles Road
Frankfort, KY 40601

Michael Cammarosano
Executive Officer, CDL
State of Louisiana
P.O. Box 64886
Baton Rouge, LA 70896
(504) 925-6335

Richard C. Moulison
Director of Driver Licensing
Registry of Motor Vehicles
100 Nashua Street
Boston, MA 02114
(617) 727-3860

John F. Lyding
CDL Coordinator
6601 Ritchie Highway
Glen Burnie, MD 21062
(301) 768-7254

Terry Bineau
CDL Coordinator
Motor Vehicle Division
Child Street, Station 29
Augusta, ME 04333
(207) 289-5513

Nelson Durand
Bureau Chief/Comm.
Vehicles & Repcy
Motor Vehicle Division
Child Street
Augusta, ME 04333
(207) 289-5440

Bill Charron
Manager of the Traffice Safety
Coordination Division;
Office of Traffic Safety
7064 Crowner Drive
Lansing, MI 48018
(517) 322-1542

Harold L. Peterson
Filed Services Administrator
Driver & Vehicle Svs Division
161 Transportation Bldg.
St. Paul, MN 55155
(612) 296-2001

Diane Heimericks
Manager, Drivers License Bureau
Division of Motor Vehicle/
Driver Licensing
P.O. Box 629
Jefferson City, MO 65105
(314) 751-7424

Capt. Ron Ford
Dir., Field Oper. Div.
Highway Safety Patrol
P.O. Box 958
Jackson, MS 39205
(601) 987-1202

best copy available

Revised 02/27/89

STATE CDL COORDINATORS

Anita Drews
CDL Coordinator
Division of Motor Vehicles
303 N. Roberts
Helena, MT 59620
(406) 444-4536

Frank Lord
Driver License Section
Division of Motor Vehicles
1100 New Bern Avenue
Raleigh, NC 27697
(919) 733-1032

Elden Spier
Director
Driver's Lic. & Traffic
Sfty. Division
600 E. Boulevard Avenue
Bismark, ND 58505-0700
(701) 224-2600

William W. Kennedy Administrat
Driver Services Division
301 Centennial Mall S.
P.O. Box 94789
Lincoln, NE 68509
(402) 471-3861

Kevin Monihan
CDL Coordinator
Department of Motor Vehicles
James H. Hays Safety Bldg.
Concord, NH 03305
(603) 271-2490

Don Henry
CDL Coordinator
Division of Motor Vehicles
25 South Montgomery Street
Trenton, NJ 08666
(609) 292-8599

Bill Darmitzel
CDL Coordinator
Motor Vehicle Division
P.O. Box 1028
Santa Fe, NM 87504-1028
(505) 827-2297

Darlene Larson
CDL Coord.
Department of Motor Vehicles
555 Wright Way
Carson City, NV 89711
(702) 885-5360

Craig A. Holbrook
CDL Coordinator/Program Eval.
Department of Motor Vehicles
Empire State Plaza
Albany, NY 12228
(518) 474-0631

Cassandra Hicks
Department of Highway Safety
240 Parsons Ave.
Columbus, OH 43266-0563
(614) 752-7795

Capt. Tom Tennery
Chief Examiner
Dept. of Public Safety
P.O. Box 11415
Oklahoma City, OK 73136
(405) 424-4011

Steve Ross
CDL Coordinator
Department of Transportation
1905 Lana Avenue, N.E.
Salem, OR 97314
(503) 373-1514

Revised 02/27/89

STATE CDL COORDINATORS

Douglas K. Tobin
Director Bureau of Driver Licensing
Transportation & Safety Bldg.
Harrisburg, PA 17120
(717) 787-4701

Elaine Phillips
Assistant Director
Division of Motor Vehicles
State Office Building, Rm 100
Providence, RI 02903
(401) 277-2679

Jill Byrd
CDL Coordinator
Dept. of Hwys & Public Transp.
P.O. Box 1498
Columbia, SC 29216-0025
(803) 737-1779

James A. Melgaard
Dir., Comm. Inspect. & Reg.
Department of Revenue
118 W. Capitol Avenue
Pierre, SD 57501-2080
(605) 773-3697

Capt. Mike Walker
Director
Department of Safety
1150 Foster Avenue
Nashville, TN 37210
(615) 251-5301

Maurice Beckham, Chief
Administration Division
Department of Public Safety
P.O. Box 4087
Austin, TX 78773-0001
(512) 465-2100

Mr. John M. Cowan, Inspector
Department of Public Safety
5805 N. Lamar Blvd.
Box 4087
Austin, TX 78773-0001
(512) 465-2875

Skip Neilson
Driver License Division
4501 South 2700 West
Salt Lake City, UT 84119
(801) 965-4407

Cheryl F.Clark
Assistant Commissioner
Department of Motor Vehicles
P.O. Box 27412
Richmond, VA 23269
(804) 367-6623

Howard Deal
Chief Examiner/Div.Field Svs.
Department of Motor Vehicles
120 State Street
State Office Bldg.
Montpelier, VT 05603-0001
(802) 828-2018

Alan Oates
CDL Coordinator
Department of Licensing
Olympia, WA 98504
(206) 586-8262

LuAnn Hansen
Bureau of Driver Licensing
P.O. Box 7917
Madison, WI 53707
(608) 266-2239

Revised 02/27/89

STATE CDL COORDINATORS

Lt. J.R. Bias, Director
Traffic Research & Safety Div.
W.V. State Police
725 Jefferson Road
South Charleston, WV 25309
(304) 746-2124

Jeff Bowles
Dir., Titles & Registration
Department of Motor Vehicles
1800 East Washington Street
Charleston, WV 25305
(304) 348-2719

Bill Harris, Acting CDL Coordinator
Trans.Cab.,Div. of Driver Lic.
122 W. 25th St.
Herschler Bldg.
Cheyenne, WY 82002-0110
307/777-5262

Ron McLees
CDL/CDLIS Development Team
Wyoming Dept. of Revenue & Tax
122 W. 25th St.
Herschler Bldg.
Cheyenne, WY 82002-0110
(307) 777-5217

APPENDIX E
LIST OF REFERENCES

1. Department of Transportation, Urban Mass Transportation Administration, "49 CFR Part 653: Control of Drug Use in Mass Transportation Operations; Final Rule," Federal Register, Part VIII, November 21, 1988.

2. Department of Transportation, Federal Highway Administration, "49 CFR Parts 383, 390, 391 and 392: Blood Alcohol Concentration Level for Commercial Motor Vehicle Drivers; Final Rule," Federal Register, Part IV, October 4, 1988.

3. Department of Transportation, Federal Highway Administration, "49 CFR Part 383: Commercial Driver Testing and Licensing Standards; Final Rule," Federal Register, Part III, July 21,1988.

4. Urban Mass Transportation Administration, "Report to Congress on the Status of the Nation's Local Mass Transportation",June 1987.

5. University of California, Institute of Transportation Studies and Graduate School of Management, "The Coordination of Functional Areas Within Transit Agencies Through Networks of Managerial and Professional Interaction", June 1985.

☆ U.S.GOVERNMENT PRINTING OFFICE:1989-617-000/03651

NOTICE

This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

The United States Government does not endorse manufacturers or products. Trade names appear in the document only because they are essential to the content of the report.

This report is being distributed through the U.S. Department of Transportation's Technology Sharing Program.

DOT-T-89-18

DOT-T-89-18

TECHNOLOGY SHARING

A Program of the U.S. Department of Transportation